Electronic Version
Stylesheet Version v1.1.1

Description

Communication device

Cross Reference to Related Applications

[0001] This application claims the benefit of U.S. Provisional Application No. 60/481,426, filed Sept. 26, 2003, which is hereby incorporated herein by reference in its entirety.

Background of Invention

[0002] The invention relates to a communication device and more particularly to the communication device which has a capability to communicate with another communication device in a wireless fashion.

[0003] U.S. Patent Publication No. 20030184600 is introduced as a prior art of the present invention of which the summary is the following: 'A system and method for organizing short-cut icons on an electronic display device utilizing a virtual filing cabinet for storing the icons to reduce clutter and confusion on large electronic device screens, and enable organized storage of the icons to be accessed at will for smaller device display screens. At the time of creation,

and at any later time, every icon can be deposited into the virtual filing cabinet with a user defined directory structure or the icon can be left displayed on the display device. A data field allows device user or the program-installer to enter a brief notation regarding the nature, functionality, and the name of the program, file, or data represented by the short-cut icon. An icon displayed on the display device screen can be deposited into virtual filing cabinet at any later time, at will, and can be called forth onto the display screen, at any later time, at will. In addition, multiple related icons can be collected into a single collective icon, with each icon accessible under the collective icon. The short-cut icon can be left on the screen, or moved off the screen and deposited into the vault, or recalled from the vault to be displayed on the display device at any time, and back and forth as often as the user desires. The present invention also provides 'icon deletion' and 'program deletion' functions through a 'pop-up' menu with each icon'.

[0004] Patent Publication No. 20020122076 is introduced as a prior art of the present invention of which the summary is the following: 'When an application program is started up, a computer system automatically creates a shortcut icon

to be used to start up the application program, and automatically deletes a shortcut icon that is determined to be no longer wanted. Upon startup of the application program, program startup information is created or updated, and when a prestored shortcut creation condition is satisfied, the shortcut icon for starting up the application program is created. The created shortcut icon for starting up the application program is deleted if the computer system determines, based on a prestored shortcut deletion condition and the program startup information, that the shortcut icon is no longer wanted'.

[0005] Pat. No. 6189018 is introduced as a prior art of the present invention of which the summary is the following: 'Disclosed is a method for generating universal resource locator links in a graphical user interface based HTML file. The method includes the operations of selecting one of a picture object and text contained within the graphical user interface based HTML file. Once one of the picture object and text are selected, a short-cut universal resource locator icon is selected. Upon selecting the short-cut universal resource locator icon, a nested menu is displayed. Preferably, the nested menu contains a list of most recently used universal resource locators, and a list of open HTML

files. Next, one of the universal resource locators is selected from the list of most recently used universal resource locators and the open HTML file from the list of open HTML files. Once selected, a link is generated from the selected one of the picture object and text contained within the graphical user interface based HTML file to one of the selected universal resource locators from the list of most recently used universal resource locators and the open HTML file'.

[0006] Pat. No. 6091409 is introduced as a prior art of the present invention of which the summary is the following: 'A client computer has a facility for encapsulating location information, such as a uniform resource locator (URL), for a resource that is available on a server computer. The facility is especially well-adapted for use with Internet documents. The location information for such a resource is encapsulated into an object known as an Internet shortcut. The Internet shortcut may created through a drag and drop operation from a link to the desktop. Appearing as an icon, the shortcut is used to gain access to the underlying resource. The Internet shortcut icon holds a link to a remote resource and will automatically activate the web browser when selected. The Internet shortcut icons may

be implemented as objects that are visible on the desktop of the operating system. File operations such as copy, delete, and copy may be performed on the Internet short-cut icon through a context menu. In addition, Internet shortcuts may be transferred to E-mail, facsimile, floppy disk destinations through a context menu'.

[0007] Pat. No. 5983245 is introduced as a prior art of the present invention of which the summary is the following: 'Disclosed is a method for generating universal resource locator links in a graphical user interface based HTML file. The method includes the operations of selecting one of a picture object and text contained within the graphical user interface based HTML file. Once one of the picture object and text are selected, a short-cut universal resource locator icon is selected. Upon selecting the short-cut universal resource locator icon, a nested menu is displayed. Preferably, the nested menu contains a list of most recently used universal resource locators, and a list of open HTML files. Next, one of the universal resource locators is selected from the list of most recently used universal resource locators and the open HTML file from the list of open HTML files. Once selected, a link is generated from the selected one of the picture object and text contained

within the graphical user interface based HTML file to one of the selected universal resource locators from the list of most recently used universal resource locators and the open HTML file'.

[0008] Pat. No. 5877765 is introduced as a prior art of the present invention of which the summary is the following: 'A client computer has a facility for encapsulating location information, such as a uniform resource locator (URL), for a resource that is available on a server computer. The facility is especially well-adapted for use with Internet documents. The location information for such a resource is encapsulated into an object known as an Internet shortcut. The Internet shortcut appears to a user as an icon that may be used to gain access to the underlying resource. The Internet shortcut icon holds a link to a remote resource and will automatically activate the web browser when selected. The Internet shortcut icons may be implemented as objects that are visible on the desktop of the operating system. File operations such as copy, delete, and copy may be performed on the Internet shortcut icon through a context menu. In addition, Internet shortcuts may be transferred to E-mail, facsimile, floppy disk destinations through a context menu'.

[0009] The foregoing prior arts do not disclose the communication device comprising a microphone, a speaker, a display, an antenna, an input device and a multiple mode implementor, wherein said multiple mode implementor implements a voice recognition tag mode and a shortcut icon displaying mode, a phone number is dialed at the time an audio data relating to said phone number is input via said microphone when said voice recognition tag mode is implemented, and a shortcut icon representing a specific software program is displayed on said display when said shortcut icon displaying mode is implemented.

SUMMARY OF INVENTION

[0010] It is an object of the present invention to provide a device capable of implementing a plurality of functions where the functions had to be implemented by a plurality of devices in the prior art.

[0011] It is another object of the present invention to provide merchandise to merchants attractive to the consumers in the U.S.

[0012] It is another object of the present invention to provide mobility to the users of communication device.

[0013] It is another object of the present invention to provide more convenience to the users of communication device

or any tangible thing in which the communication device is fixedly or detachably installed.

[0014] It is another object of the present invention to overcome the shortcomings associated with the foregoing prior arts.

[0015] It is another object of the present invention to provide a device capable to implement a plurality of modes, i.e., the voice recognition tag mode and the shortcut icon displaying mode.

[0016] The present invention introduces the communication device comprising a microphone, a speaker, a display, an antenna, an input device and a multiple mode implementor, wherein said multiple mode implementor implements a voice recognition tag mode and a shortcut icon displaying mode, a phone number is dialed at the time an audio data relating to said phone number is input via said microphone when said voice recognition tag mode is implemented, and a shortcut icon representing a specific software program is displayed on said display when said shortcut icon displaying mode is implemented.

Brief Description of Drawings

[0017] The above and other aspects, features, and advantages of the invention will be better understood by reading the following more particular description of the invention, pre-

sented in conjunction with the following drawings, wherein:

[0018] Fig. 1 is a block diagram illustrating an exemplary embodiment of the present invention.

[0019] Fig. 2a is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0020] Fig. 2b is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0021] Fig. 2c is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0022] Fig. 3 is a block diagram illustrating an exemplary embodiment of the present invention.

[0023] Fig. 4 is a block diagram illustrating an exemplary embodiment of the present invention.

[0024] Fig. 5 is a flowchart illustrating an exemplary embodiment of the present invention.

[0025] Fig. 6a is a flowchart illustrating an exemplary embodiment of the present invention.

[0026] Fig. 6b is a flowchart illustrating an exemplary embodiment of the present invention.

[0027] Fig. 7 is a flowchart illustrating an exemplary embodiment of the present invention.

[0028] Fig. 8 is a simplified illustration illustrating an exemplary

embodiment of the present invention.

[0029] Fig. 9 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0030] Fig. 10 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0031] Fig. 11 is a flowchart illustrating an exemplary embodiment of the present invention.

[0032] Fig. 12 is a flowchart illustrating an exemplary embodiment of the present invention.

[0033] Fig. 13 is a block diagram illustrating an exemplary embodiment of the present invention.

[0034] Fig. 14 is a flowchart illustrating an exemplary embodiment of the present invention.

[0035] Fig. 14a is a flowchart illustrating an exemplary embodiment of the present invention.

[0036] Fig. 15 is a flowchart illustrating an exemplary embodiment of the present invention.

[0037] Fig. 16 is a flowchart illustrating an exemplary embodiment of the present invention.

[0038] Fig. 17a is a flowchart illustrating an exemplary embodiment of the present invention.

[0039] Fig. 17b is a flowchart illustrating an exemplary embodiment of the present invention.

[0040] Fig. 18 is a flowchart illustrating an exemplary embodiment of the present invention.

[0041] Fig. 19 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0042] Fig. 20a is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0043] Fig. 20b is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0044] Fig. 21 is a flowchart illustrating an exemplary embodiment of the present invention.

[0045] Fig. 22 is a flowchart illustrating an exemplary embodiment of the present invention.

[0046] Fig. 23 is a flowchart illustrating an exemplary embodiment of the present invention.

[0047] Fig. 24 is a flowchart illustrating an exemplary embodiment of the present invention.

[0048] Fig. 25 is a flowchart illustrating an exemplary embodiment of the present invention.

[0049] Fig. 26 is a flowchart illustrating an exemplary embodiment of the present invention.

[0050] Fig. 27a is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0051] Fig. 27b is a simplified illustration illustrating an exem-

plary embodiment of the present invention.

[0052] Fig. 28 is a flowchart illustrating an exemplary embodiment of the present invention.

[0053] Fig. 29 is a flowchart illustrating an exemplary embodiment of the present invention.

[0054] Fig. 30 is a flowchart illustrating an exemplary embodiment of the present invention.

[0055] Fig. 31 is a flowchart illustrating an exemplary embodiment of the present invention.

[0056] Fig. 32 is a flowchart illustrating an exemplary embodiment of the present invention.

[0057] Fig. 32a is a block diagram illustrating an exemplary embodiment of the present invention.

[0058] Fig. 32b is a flowchart illustrating an exemplary embodiment of the present invention.

[0059] Fig. 32c is a flowchart illustrating an exemplary embodiment of the present invention.

[0060] Fig. 32d is a flowchart illustrating an exemplary embodiment of the present invention.

[0061] Fig. 32e is a flowchart illustrating an exemplary embodiment of the present invention.

[0062] Fig. 32f is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0063] Fig. 32g is a flowchart illustrating an exemplary embodiment of the present invention.

[0064] Fig. 33 is a block diagram illustrating an exemplary embodiment of the present invention.

[0065] Fig. 34 is a flowchart illustrating an exemplary embodiment of the present invention.

[0066] Fig. 35a is a flowchart illustrating an exemplary embodiment of the present invention.

[0067] Fig. 35b is a flowchart illustrating an exemplary embodiment of the present invention.

[0068] Fig. 36 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0069] Fig. 37 is a block diagram illustrating an exemplary embodiment of the present invention.

[0070] Fig. 38 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0071] Fig. 39 is a block diagram illustrating an exemplary embodiment of the present invention.

[0072] Fig. 40 is a flowchart illustrating an exemplary embodiment of the present invention.

[0073] Fig. 41 is a flowchart illustrating an exemplary embodiment of the present invention.

[0074] Fig. 42 is a simplified illustration illustrating an exemplary

embodiment of the present invention.

[0075] Fig. 43 is a block diagram illustrating an exemplary embodiment of the present invention.

[0076] Fig. 44a is a flowchart illustrating an exemplary embodiment of the present invention.

[0077] Fig. 44b is a flowchart illustrating an exemplary embodiment of the present invention.

[0078] Fig. 44c is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0079] Fig. 44d is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0080] Fig. 44e is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0081] Fig. 45 is a block diagram illustrating an exemplary embodiment of the present invention.

[0082] Fig. 46 is a flowchart illustrating an exemplary embodiment of the present invention.

[0083] Fig. 47 is a flowchart illustrating an exemplary embodiment of the present invention.

[0084] Fig. 48 is a block diagram illustrating an exemplary embodiment of the present invention.

[0085] Fig. 49 is a block diagram illustrating an exemplary embodiment of the present invention.

[0086] Fig. 50 is a flowchart illustrating an exemplary embodiment of the present invention.

[0087] Fig. 51 is a flowchart illustrating an exemplary embodiment of the present invention.

[0088] Fig. 52 is a flowchart illustrating an exemplary embodiment of the present invention.

[0089] Fig. 53a is a flowchart illustrating an exemplary embodiment of the present invention.

[0090] Fig. 53b is a flowchart illustrating an exemplary embodiment of the present invention.

[0091] Fig. 54 is a block diagram illustrating an exemplary embodiment of the present invention.

[0092] Fig. 55 is a flowchart illustrating an exemplary embodiment of the present invention.

[0093] Fig. 56 is a flowchart illustrating an exemplary embodiment of the present invention.

[0094] Fig. 57 is a block diagram illustrating an exemplary embodiment of the present invention.

[0095] Fig. 58 is a flowchart illustrating an exemplary embodiment of the present invention.

[0096] Fig. 59 is a flowchart illustrating an exemplary embodiment of the present invention.

[0097] Fig. 60 is a block diagram illustrating an exemplary em-

bodiment of the present invention.

[0098] Fig. 61a is a flowchart illustrating an exemplary embodiment of the present invention.

[0099] Fig. 61b is a flowchart illustrating an exemplary embodiment of the present invention.

[0100] Fig. 62 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0101] Fig. 63 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0102] Fig. 64 is a flowchart illustrating an exemplary embodiment of the present invention.

[0103] Fig. 65 is a block diagram illustrating an exemplary embodiment of the present invention.

[0104] Fig. 66 is a block diagram illustrating an exemplary embodiment of the present invention.

[0105] Fig. 67 is a flowchart illustrating an exemplary embodiment of the present invention.

[0106] Fig. 68 is a flowchart illustrating an exemplary embodiment of the present invention.

[0107] Fig. 69 is a flowchart illustrating an exemplary embodiment of the present invention.

[0108] Fig. 70 is a flowchart illustrating an exemplary embodiment of the present invention.

[0109] Fig. 71 is a flowchart illustrating an exemplary embodiment of the present invention.

[0110] Fig. 72 is a flowchart illustrating an exemplary embodiment of the present invention.

[0111] Fig. 73 is a flowchart illustrating an exemplary embodiment of the present invention.

[0112] Fig. 74 is a flowchart illustrating an exemplary embodiment of the present invention.

[0113] Fig. 74a is a flowchart illustrating an exemplary embodiment of the present invention.

[0114] Fig. 75 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0115] Fig. 76 is a flowchart illustrating an exemplary embodiment of the present invention.

[0116] Fig. 77 is a flowchart illustrating an exemplary embodiment of the present invention.

[0117] Fig. 78 is a flowchart illustrating an exemplary embodiment of the present invention.

[0118] Fig. 79 is a flowchart illustrating an exemplary embodiment of the present invention.

[0119] Fig. 80 is a flowchart illustrating an exemplary embodiment of the present invention.

[0120] Fig. 81 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[0121] Fig. 82 is a flowchart illustrating an exemplary embodiment of the present invention.

[0122] Fig. 83 is a flowchart illustrating an exemplary embodiment of the present invention.

[0123] Fig. 84 is a flowchart illustrating an exemplary embodiment of the present invention.

[0124] Fig. 85 is a block diagram illustrating an exemplary embodiment of the present invention.

[0125] Fig. 86 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0126] Fig. 87 is a flowchart illustrating an exemplary embodiment of the present invention.

[0127] Fig. 88 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0128] Fig. 89 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0129] Fig. 90 is a block diagram illustrating an exemplary embodiment of the present invention.

[0130] Fig. 91 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0131] Fig. 92 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0132] Fig. 93 is a block diagram illustrating an exemplary embodiment of the present invention.

[0133] Fig. 94 is a block diagram illustrating an exemplary embodiment of the present invention.

[0134] Fig. 95a is a simplified illustration of data utilized in the present invention.

[0135] Fig. 95b is a simplified illustration of data utilized in the present invention.

[0136] Fig. 96 is a simplified illustration of contents and items shown on display.

[0137] Fig. 97 is a simplified illustration of contents and items shown on display.

[0138] Fig. 98 is a flowchart illustrating an exemplary embodiment of the present invention.

[0139] Fig. 99 is a block diagram illustrating an exemplary embodiment of the present invention.

[0140] Fig. 100 is a block diagram illustrating an exemplary embodiment of the present invention.

[0141] Fig. 101 is a block diagram illustrating an exemplary embodiment of the present invention.

[0142] Fig. 102 is a simplified illustration of contents and items shown on display.

[0143] Fig. 103 is a block diagram illustrating an exemplary em-

bodiment of the present invention.

[0144] Fig. 104 is a flowchart illustrating an exemplary embodiment of the present invention.

[0145] Fig. 105 is a simplified illustration of contents and items shown on display.

[0146] Fig. 106 is a block diagram illustrating an exemplary embodiment of the present invention.

[0147] Fig. 107 is a flowchart illustrating an exemplary embodiment of the present invention.

[0148] Fig. 108 is a flowchart illustrating an exemplary embodiment of the present invention.

[0149] Fig. 109 is a simplified illustration of contents and items shown on display.

[0150] Fig. 110 is a block diagram illustrating an exemplary embodiment of the present invention.

[0151] Fig. 111 is a flowchart illustrating an exemplary embodiment of the present invention.

[0152] Fig. 112 is a flowchart illustrating an exemplary embodiment of the present invention.

[0153] Fig. 113 is a simplified illustration of contents and items shown on display.

[0154] Fig. 114 is a flowchart illustrating an exemplary embodiment of the present invention.

[0155] Fig. 115 is a flowchart illustrating an exemplary embodiment of the present invention.

[0156] Fig. 116 is a block diagram illustrating an exemplary embodiment of the present invention.

[0157] Fig. 117 is a block diagram illustrating an exemplary embodiment of the present invention.

[0158] Fig. 118 is a block diagram illustrating an exemplary embodiment of the present invention.

[0159] Fig. 119 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0160] Fig. 120 is a flowchart illustrating an exemplary embodiment of the present invention.

[0161] Fig. 121 is a simplified illustration of contents and items shown on display.

[0162] Fig. 122 is a block diagram illustrating an exemplary embodiment of the present invention.

[0163] Fig. 123 is a flowchart illustrating an exemplary embodiment of the present invention.

[0164] Fig. 124 is a simplified illustration of contents and items shown on display.

[0165] Fig. 125 is a flowchart illustrating an exemplary embodiment of the present invention.

[0166] Fig. 126 is a block diagram illustrating an exemplary em-

bodiment of the present invention.

[0167] Fig. 127 is a simplified illustration of contents and items shown on display.

[0168] Fig. 128 is a flowchart illustrating an exemplary embodiment of the present invention.

[0169] Fig. 129 is a block diagram illustrating an exemplary embodiment of the present invention.

[0170] Fig. 130 is a block diagram illustrating an exemplary embodiment of the present invention.

[0171] Fig. 131a is a simplified illustration of data utilized in the present invention.

[0172] Fig. 131b is a simplified illustration of data utilized in the present invention.

[0173] Fig. 132 is a block diagram illustrating an exemplary embodiment of the present invention.

[0174] Fig. 133 is a flowchart illustrating an exemplary embodiment of the present invention.

[0175] Fig. 134 is a flowchart illustrating an exemplary embodiment of the present invention.

[0176] Fig. 135 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0177] Fig. 136is a block diagram illustrating an exemplary embodiment of the present invention.

[0178] Fig. 137 is a flowchart illustrating an exemplary embodiment of the present invention.

[0179] Fig. 138 is a block diagram illustrating an exemplary embodiment of the present invention.

[0180] Fig. 139 is a flowchart illustrating an exemplary embodiment of the present invention.

[0181] Fig. 140 is a flowchart illustrating an exemplary embodiment of the present invention.

[0182] Fig. 141 is a block diagram illustrating an exemplary embodiment of the present invention.

[0183] Fig. 142 is a flowchart illustrating an exemplary embodiment of the present invention.

[0184] Fig. 143 is a flowchart illustrating an exemplary embodiment of the present invention.

[0185] Fig. 144 is a block diagram illustrating an exemplary embodiment of the present invention.

[0186] Fig. 145 is a flowchart illustrating an exemplary embodiment of the present invention.

[0187] Fig. 146 is a block diagram illustrating an exemplary embodiment of the present invention.

[0188] Fig. 147 is a block diagram illustrating an exemplary embodiment of the present invention.

[0189] Fig. 148 is a block diagram illustrating an exemplary em-

bodiment of the present invention.

[0190] Fig. 149 is a flowchart illustrating an exemplary embodiment of the present invention.

[0191] Fig. 150 is a flowchart illustrating an exemplary embodiment of the present invention.

[0192] Fig. 151 is a flowchart illustrating an exemplary embodiment of the present invention.

[0193] Fig. 152 is a flowchart illustrating an exemplary embodiment of the present invention.

[0194] Fig. 153 is a flowchart illustrating an exemplary embodiment of the present invention.

[0195] Fig. 154 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0196] Fig. 155 is a flowchart illustrating an exemplary embodiment of the present invention.

[0197] Fig. 156 is a flowchart illustrating an exemplary embodiment of the present invention.

[0198] Fig. 157 is a block diagram illustrating an exemplary embodiment of the present invention.

[0199] Fig. 157a is a block diagram illustrating an exemplary embodiment of the present invention.

[0200] Fig. 158 is a flowchart illustrating an exemplary embodiment of the present invention.

[0201] Fig. 159 is a flowchart illustrating an exemplary embodiment of the present invention.

[0202] Fig. 160 is a flowchart illustrating an exemplary embodiment of the present invention.

[0203] Fig. 161 is a block diagram illustrating an exemplary embodiment of the present invention.

[0204] Fig. 162 is a flowchart illustrating an exemplary embodiment of the present invention.

[0205] Fig. 163 is a block diagram illustrating an exemplary embodiment of the present invention.

[0206] Fig. 164 is a flowchart illustrating an exemplary embodiment of the present invention.

[0207] Fig. 165 is a block diagram illustrating an exemplary embodiment of the present invention.

[0208] Fig. 166 is a block diagram illustrating an exemplary embodiment of the present invention.

[0209] Fig. 167 is a flowchart illustrating an exemplary embodiment of the present invention.

[0210] Fig. 167a is a flowchart illustrating an exemplary embodiment of the present invention.

[0211] Fig. 168a is a flowchart illustrating an exemplary embodiment of the present invention.

[0212] Fig. 168b is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[0213] Fig. 169a is a flowchart illustrating an exemplary embodiment of the present invention.

[0214] Fig. 169b is a flowchart illustrating an exemplary embodiment of the present invention.

[0215] Fig. 169c is a flowchart illustrating an exemplary embodiment of the present invention.

[0216] Fig. 169d is a flowchart illustrating an exemplary embodiment of the present invention.

[0217] Fig. 170 is a block diagram illustrating an exemplary embodiment of the present invention.

[0218] Fig. 171 is a flowchart illustrating an exemplary embodiment of the present invention.

[0219] Fig. 172 is a block diagram illustrating an exemplary embodiment of the present invention.

[0220] Fig. 173 is a flowchart illustrating an exemplary embodiment of the present invention.

[0221] Fig. 174 is a flowchart illustrating an exemplary embodiment of the present invention.

[0222] Fig. 175 is a flowchart illustrating an exemplary embodiment of the present invention.

[0223] Fig. 176 is a flowchart illustrating an exemplary embodiment of the present invention.

[0224] Fig. 177 is a flowchart illustrating an exemplary embodiment of the present invention.

[0225] Fig. 178 is a flowchart illustrating an exemplary embodiment of the present invention.

[0226] Fig. 179 is a flowchart illustrating an exemplary embodiment of the present invention.

[0227] Fig. 180 is a block diagram illustrating an exemplary embodiment of the present invention.

[0228] Fig. 181 is a block diagram illustrating an exemplary embodiment of the present invention.

[0229] Fig. 181a is a flowchart illustrating an exemplary embodiment of the present invention.

[0230] Fig. 181b is a flowchart illustrating an exemplary embodiment of the present invention.

[0231] Fig. 181c is a flowchart illustrating an exemplary embodiment of the present invention.

[0232] Fig. 181d is a flowchart illustrating an exemplary embodiment of the present invention.

[0233] Fig. 181e is a flowchart illustrating an exemplary embodiment of the present invention.

[0234] Fig. 182 is a flowchart illustrating an exemplary embodiment of the present invention.

[0235] Fig. 183 is a block diagram illustrating an exemplary em-

bodiment of the present invention.

[0236] Fig. 184 is a block diagram illustrating an exemplary embodiment of the present invention.

[0237] Fig. 185 is a flowchart illustrating an exemplary embodiment of the present invention.

[0238] Fig. 186 is a flowchart illustrating an exemplary embodiment of the present invention.

[0239] Fig. 187 is a block diagram illustrating an exemplary embodiment of the present invention.

[0240] Fig. 188 is a block diagram illustrating an exemplary embodiment of the present invention.

[0241] Fig. 188a is a flowchart illustrating an exemplary embodiment of the present invention.

[0242] Fig. 189 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0243] Fig. 190 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0244] Fig. 191 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0245] Fig. 192 is a block diagram illustrating an exemplary embodiment of the present invention.

[0246] Fig. 193 is a block diagram illustrating an exemplary embodiment of the present invention.

[0247] Fig. 194 is a flowchart illustrating an exemplary embodiment of the present invention.

[0248] Fig. 195 is a flowchart illustrating an exemplary embodiment of the present invention.

[0249] Fig. 196 is a block diagram illustrating an exemplary embodiment of the present invention.

[0250] Fig. 197 is a block diagram illustrating an exemplary embodiment of the present invention.

[0251] Fig. 198 is a flowchart illustrating an exemplary embodiment of the present invention.

[0252] Fig. 199 is a block diagram illustrating an exemplary embodiment of the present invention.

[0253] Fig. 200 is a flowchart illustrating an exemplary embodiment of the present invention.

[0254] Fig. 201 is a flowchart illustrating an exemplary embodiment of the present invention.

[0255] Fig. 202 is a block diagram illustrating an exemplary embodiment of the present invention.

[0256] Fig. 203 is a flowchart illustrating an exemplary embodiment of the present invention.

[0257] Fig. 204 is a flowchart illustrating an exemplary embodiment of the present invention.

[0258] Fig. 205 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[0259] Fig. 206 is a block diagram illustrating an exemplary embodiment of the present invention.

[0260] Fig. 207 is a flowchart illustrating an exemplary embodiment of the present invention.

[0261] Fig. 208 is a flowchart illustrating an exemplary embodiment of the present invention.

[0262] Fig. 209 is a flowchart illustrating an exemplary embodiment of the present invention.

[0263] Fig. 210a is a flowchart illustrating an exemplary embodiment of the present invention.

[0264] Fig. 210b is a flowchart illustrating an exemplary embodiment of the present invention.

[0265] Fig. 211a is a flowchart illustrating an exemplary embodiment of the present invention.

[0266] Fig. 211b is a flowchart illustrating an exemplary embodiment of the present invention.

[0267] Fig. 212 is a block diagram illustrating an exemplary embodiment of the present invention.

[0268] Fig. 213 is a block diagram illustrating an exemplary embodiment of the present invention.

[0269] Fig. 214 is a flowchart illustrating an exemplary embodiment of the present invention.

[0270] Fig. 215 is a flowchart illustrating an exemplary embodiment of the present invention.

[0271] Fig. 216 is a flowchart illustrating an exemplary embodiment of the present invention.

[0272] Fig. 217 is a flowchart illustrating an exemplary embodiment of the present invention.

[0273] Fig. 218 is a flowchart illustrating an exemplary embodiment of the present invention.

[0274] Fig. 219 is a flowchart illustrating an exemplary embodiment of the present invention.

[0275] Fig. 220 is a flowchart illustrating an exemplary embodiment of the present invention.

[0276] Fig. 221 is a flowchart illustrating an exemplary embodiment of the present invention.

[0277] Fig. 222 is a block diagram illustrating an exemplary embodiment of the present invention.

[0278] Fig. 223 is a flowchart illustrating an exemplary embodiment of the present invention.

[0279] Fig. 224 is a flowchart illustrating an exemplary embodiment of the present invention.

[0280] Fig. 225 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0281] Fig. 226 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[0282] Fig. 227 is a block diagram illustrating an exemplary embodiment of the present invention.

[0283] Fig. 228 is a block diagram illustrating an exemplary embodiment of the present invention.

[0284] Fig. 228a is a block diagram illustrating an exemplary embodiment of the present invention.

[0285] Fig. 228b is a block diagram illustrating an exemplary embodiment of the present invention.

[0286] Fig. 228c is a block diagram illustrating an exemplary embodiment of the present invention.

[0287] Fig. 229 is a block diagram illustrating an exemplary embodiment of the present invention.

[0288] Fig. 230 is a block diagram illustrating an exemplary embodiment of the present invention.

[0289] Fig. 231 is a flowchart illustrating an exemplary embodiment of the present invention.

[0290] Fig. 232 is a flowchart illustrating an exemplary embodiment of the present invention.

[0291] Fig. 232a is a flowchart illustrating an exemplary embodiment of the present invention.

[0292] Fig. 233 is a flowchart illustrating an exemplary embodiment of the present invention.

[0293] Fig. 233a is a flowchart illustrating an exemplary embodiment of the present invention.

[0294] Fig. 233b is a simplified illustration of data utilized in the present invention.

[0295] Fig. 233c is a block diagram illustrating an exemplary embodiment of the present invention.

[0296] Fig. 233d is a flowchart illustrating an exemplary embodiment of the present invention.

[0297] Fig. 233e is a flowchart illustrating an exemplary embodiment of the present invention.

[0298] Fig. 234 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0299] Fig. 234a is a block diagram illustrating an exemplary embodiment of the present invention.

[0300] Fig. 234b is a flowchart illustrating an exemplary embodiment of the present invention.

[0301] Fig. 235 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0302] Fig. 236 is a flowchart illustrating an exemplary embodiment of the present invention.

[0303] Fig. 237 is a flowchart illustrating an exemplary embodiment of the present invention.

[0304] Fig. 238 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[0305] Fig. 239 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0306] Fig. 240 is a flowchart illustrating an exemplary embodiment of the present invention.

[0307] Fig. 241 is a flowchart illustrating an exemplary embodiment of the present invention.

[0308] Fig. 242 is a flowchart illustrating an exemplary embodiment of the present invention.

[0309] Fig. 243 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0310] Fig. 243a is a flowchart illustrating an exemplary embodiment of the present invention.

[0311] Fig. 243b is a block diagram illustrating an exemplary embodiment of the present invention.

[0312] Fig. 243c is a simplified illustration of contents and items shown on display.

[0313] Fig. 243d is a simplified illustration of contents and items shown on display.

[0314] Fig. 243e is a block diagram illustrating an exemplary embodiment of the present invention.

[0315] Fig. 244 is a flowchart illustrating an exemplary embodiment of the present invention.

[0316] Fig. 244a is a block diagram illustrating an exemplary embodiment of the present invention.

[0317] Fig. 245 is a flowchart illustrating an exemplary embodiment of the present invention.

[0318] Fig. 246 is a flowchart illustrating an exemplary embodiment of the present invention.

[0319] Fig. 247 is a flowchart illustrating an exemplary embodiment of the present invention.

[0320] Fig. 248 is a flowchart illustrating an exemplary embodiment of the present invention.

[0321] Fig. 249 is a flowchart illustrating an exemplary embodiment of the present invention.

[0322] Fig. 250 is a flowchart illustrating an exemplary embodiment of the present invention.

[0323] Fig. 251 is a flowchart illustrating an exemplary embodiment of the present invention.

[0324] Fig. 252 is a simplified illustration of data utilized in the present invention.

[0325] Fig. 253 is a flowchart illustrating an exemplary embodiment of the present invention.

[0326] Fig. 254a is a block diagram illustrating an exemplary embodiment of the present invention.

[0327] Fig. 254b is a block diagram illustrating an exemplary

embodiment of the present invention.

[0328] Fig. 255 is a flowchart illustrating an exemplary embodiment of the present invention.

[0329] Fig. 255a is a flowchart illustrating an exemplary embodiment of the present invention.

[0330] Fig. 255b is a flowchart illustrating an exemplary embodiment of the present invention.

[0331] Fig. 256 is a simplified illustration of data utilized in the present invention.

[0332] Fig. 257 is a flowchart illustrating an exemplary embodiment of the present invention.

[0333] Fig. 257a is a simplified illustration of data utilized in the present invention.

[0334] Fig. 258 is a flowchart illustrating an exemplary embodiment of the present invention.

[0335] Fig. 259a is a simplified illustration of data utilized in the present invention.

[0336] Fig. 259b is a simplified illustration of data utilized in the present invention.

[0337] Fig. 259c is a simplified illustration of data utilized in the present invention.

[0338] Fig. 260 is a flowchart illustrating an exemplary embodiment of the present invention.

[0339] Fig. 261 is a simplified illustration of data utilized in the present invention.

[0340] Fig. 262 is a flowchart illustrating an exemplary embodiment of the present invention.

[0341] Fig. 263 is a simplified illustration of data utilized in the present invention.

[0342] Fig. 264 is a flowchart illustrating an exemplary embodiment of the present invention.

[0343] Fig. 265 is a flowchart illustrating an exemplary embodiment of the present invention.

[0344] Fig. 266 is a simplified illustration of data utilized in the present invention.

[0345] Fig. 267 is a flowchart illustrating an exemplary embodiment of the present invention.

[0346] Fig. 268 is a simplified illustration of data utilized in the present invention.

[0347] Fig. 269 is a flowchart illustrating an exemplary embodiment of the present invention.

[0348] Fig. 270 is a simplified illustration of contents and items shown on display.

[0349] Fig. 271 is a simplified illustration of data utilized in the present invention.

[0350] Fig. 272 is a block diagram illustrating an exemplary em-

bodiment of the present invention.

[0351] Fig. 273 is a flowchart illustrating an exemplary embodiment of the present invention.

[0352] Fig. 274 is a flowchart illustrating an exemplary embodiment of the present invention.

[0353] Fig. 275 is a flowchart illustrating an exemplary embodiment of the present invention.

[0354] Fig. 276 is a flowchart illustrating an exemplary embodiment of the present invention.

[0355] Fig. 277 is a flowchart illustrating an exemplary embodiment of the present invention.

[0356] Fig. 278 is a flowchart illustrating an exemplary embodiment of the present invention.

[0357] Fig. 279 is a flowchart illustrating an exemplary embodiment of the present invention.

[0358] Fig. 280 is a flowchart illustrating an exemplary embodiment of the present invention.

[0359] Fig. 281 is a flowchart illustrating an exemplary embodiment of the present invention.

[0360] Fig. 282 is a flowchart illustrating an exemplary embodiment of the present invention.

[0361] Fig. 283 is a flowchart illustrating an exemplary embodiment of the present invention.

[0362] Fig. 284 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0363] Fig. 285 is a simplified illustration of data utilized in the present invention.

[0364] Fig. 286 is a block diagram illustrating an exemplary embodiment of the present invention.

[0365] Fig. 287 is a block diagram illustrating an exemplary embodiment of the present invention.

[0366] Fig. 288 is a flowchart illustrating an exemplary embodiment of the present invention.

[0367] Fig. 289 is a flowchart illustrating an exemplary embodiment of the present invention.

[0368] Fig. 290 is a flowchart illustrating an exemplary embodiment of the present invention.

[0369] Fig. 291 is a flowchart illustrating an exemplary embodiment of the present invention.

[0370] Fig. 292 is a flowchart illustrating an exemplary embodiment of the present invention.

[0371] Fig. 293 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0372] Fig. 294 is a flowchart illustrating an exemplary embodiment of the present invention.

[0373] Fig.295 is a simplified illustration illustrating an exem-

plary embodiment of the present invention.

[0374] Fig.296 is a flowchart illustrating an exemplary embodiment of the present invention.

[0375] Fig. 297is a block diagram illustrating an exemplary embodiment of the present invention.

[0376] Fig. 298 is a flowchart illustrating an exemplary embodiment of the present invention.

[0377] Fig. 299 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0378] Fig. 300 is a block diagram illustrating an exemplary embodiment of the present invention.

[0379] Fig. 301 is a block diagram illustrating an exemplary embodiment of the present invention.

[0380] Fig. 302 is a block diagram illustrating an exemplary embodiment of the present invention.

[0381] Fig. 303 is a flowchart illustrating an exemplary embodiment of the present invention.

[0382] Fig. 304 is a block diagram illustrating an exemplary embodiment of the present invention.

[0383] Fig. 305 is a flowchart illustrating an exemplary embodiment of the present invention.

[0384] Fig. 306 is a block diagram illustrating an exemplary embodiment of the present invention.

[0385] Fig. 307 is a block diagram illustrating an exemplary embodiment of the present invention.

[0386] Fig. 308 is a flowchart illustrating an exemplary embodiment of the present invention.

[0387] Fig. 309 is a block diagram illustrating an exemplary embodiment of the present invention.

[0388] Fig. 310 is a flowchart illustrating an exemplary embodiment of the present invention.

[0389] Fig. 311 is a block diagram illustrating an exemplary embodiment of the present invention.

[0390] Fig. 312 is a block diagram illustrating an exemplary embodiment of the present invention.

[0391] Fig. 313 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0392] Fig. 314 is a flowchart illustrating an exemplary embodiment of the present invention.

[0393] Fig. 315 is a block diagram illustrating an exemplary embodiment of the present invention.

[0394] Fig. 316 is a block diagram illustrating an exemplary embodiment of the present invention.

[0395] Fig. 317 is a block diagram illustrating an exemplary embodiment of the present invention.

[0396] Fig. 318 is a simplified illustration illustrating an exem-

plary embodiment of the present invention.

[0397] Fig. 319 is a block diagram illustrating an exemplary embodiment of the present invention.

[0398] Fig. 320 is a flowchart illustrating an exemplary embodiment of the present invention.

[0399] Fig. 321 is a block diagram illustrating an exemplary embodiment of the present invention.

[0400] Fig. 322 is a block diagram illustrating an exemplary embodiment of the present invention.

[0401] Fig. 323 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0402] Fig. 324 is a flowchart illustrating an exemplary embodiment of the present invention.

[0403] Fig. 325 is a block diagram illustrating an exemplary embodiment of the present invention.

[0404] Fig. 326 is a block diagram illustrating an exemplary embodiment of the present invention.

[0405] Fig. 327 is a flowchart illustrating an exemplary embodiment of the present invention.

[0406] Fig. 328 is a flowchart illustrating an exemplary embodiment of the present invention.

[0407] Fig. 329 is a block diagram illustrating an exemplary embodiment of the present invention.

[0408] Fig. 329a is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0409] Fig. 329b is a flowchart illustrating an exemplary embodiment of the present invention.

[0410] Fig. 329c is a flowchart illustrating an exemplary embodiment of the present invention.

[0411] Fig. 330 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0412] Fig. 331 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0413] Fig. 332 is a flowchart illustrating an exemplary embodiment of the present invention.

[0414] Fig. 333 is a block diagram illustrating an exemplary embodiment of the present invention.

[0415] Fig. 334 is a block diagram illustrating an exemplary embodiment of the present invention.

[0416] Fig. 335 is a block diagram illustrating an exemplary embodiment of the present invention.

[0417] Fig. 336 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0418] Fig. 337 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0419] Fig. 338 is a simplified illustration illustrating an exem-

plary embodiment of the present invention.

[0420] Fig. 339 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0421] Fig. 340 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0422] Fig. 341 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0423] Fig. 342 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0424] Fig. 343 is a flowchart illustrating an exemplary embodiment of the present invention.

[0425] Fig. 344 is a block diagram illustrating an exemplary embodiment of the present invention.

[0426] Fig. 345 is a block diagram illustrating an exemplary embodiment of the present invention.

[0427] Fig. 346 is a flowchart illustrating an exemplary embodiment of the present invention.

[0428] Fig. 347 is a flowchart illustrating an exemplary embodiment of the present invention.

[0429] Fig. 348 is a flowchart illustrating an exemplary embodiment of the present invention.

[0430] Fig. 349 is a flowchart illustrating an exemplary embodiment of the present invention.

[0431] Fig. 350 is a flowchart illustrating an exemplary embodiment of the present invention.

[0432] Fig. 351 is a flowchart illustrating an exemplary embodiment of the present invention.

[0433] Fig. 352 is a flowchart illustrating an exemplary embodiment of the present invention.

[0434] Fig. 353 is a flowchart illustrating an exemplary embodiment of the present invention.

[0435] Fig. 354 is a block diagram illustrating an exemplary embodiment of the present invention.

[0436] Fig. 355 is a block diagram illustrating an exemplary embodiment of the present invention.

[0437] Fig. 356 is a flowchart illustrating an exemplary embodiment of the present invention.

[0438] Fig. 357 is a flowchart illustrating an exemplary embodiment of the present invention.

[0439] Fig. 358 is a block diagram illustrating an exemplary embodiment of the present invention.

[0440] Fig. 359 is a block diagram illustrating an exemplary embodiment of the present invention.

[0441] Fig. 360 is a flowchart illustrating an exemplary embodiment of the present invention.

[0442] Fig. 361 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[0443] Fig. 362 is a block diagram illustrating an exemplary embodiment of the present invention.

[0444] Fig. 363 is a block diagram illustrating an exemplary embodiment of the present invention.

[0445] Fig. 364 is a block diagram illustrating an exemplary embodiment of the present invention.

[0446] Fig. 365 is a block diagram illustrating an exemplary embodiment of the present invention.

[0447] Fig. 365a is a flowchart illustrating an exemplary embodiment of the present invention.

[0448] Fig. 366 is a flowchart illustrating an exemplary embodiment of the present invention.

[0449] Fig. 367 is a flowchart illustrating an exemplary embodiment of the present invention.

[0450] Fig. 368 is a flowchart illustrating an exemplary embodiment of the present invention.

[0451] Fig. 369 is a flowchart illustrating an exemplary embodiment of the present invention.

[0452] Fig. 370 is a flowchart illustrating an exemplary embodiment of the present invention.

[0453] Fig. 371 is a flowchart illustrating an exemplary embodiment of the present invention.

[0454] Fig. 372 is a flowchart illustrating an exemplary embodiment of the present invention.

[0455] Fig. 373 is a flowchart illustrating an exemplary embodiment of the present invention.

[0456] Fig.374 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0457] Fig. 375 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0458] Fig. 376 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0459] Fig. 377 is a block diagram illustrating an exemplary embodiment of the present invention.

[0460] Fig. 378 is a block diagram illustrating an exemplary embodiment of the present invention.

[0461] Fig. 379 is a block diagram illustrating an exemplary embodiment of the present invention.

[0462] Fig. 380 is a block diagram illustrating an exemplary embodiment of the present invention.

[0463] Fig. 381 is a flowchart illustrating an exemplary embodiment of the present invention.

[0464] Fig. 382 is a block diagram illustrating an exemplary embodiment of the present invention.

[0465] Fig. 383 is a block diagram illustrating an exemplary em-

bodiment of the present invention.

[0466] Fig. 384 is a block diagram illustrating an exemplary embodiment of the present invention.

[0467] Fig. 385 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0468] Fig. 386 is a flowchart illustrating an exemplary embodiment of the present invention.

[0469] Fig. 387 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0470] Fig. 388 is a flowchart illustrating an exemplary embodiment of the present invention.

[0471] Fig. 389 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0472] Fig. 390 is a flowchart illustrating an exemplary embodiment of the present invention.

[0473] Fig. 391 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0474] Fig. 392 is a flowchart illustrating an exemplary embodiment of the present invention.

[0475] Fig. 393 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0476] Fig. 394 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0477] Fig. 395 is a block diagram illustrating an exemplary embodiment of the present invention.

[0478] Fig. 396 is a flowchart illustrating an exemplary embodiment of the present invention.

[0479] Fig. 397 is a flowchart illustrating an exemplary embodiment of the present invention.

[0480] Fig. 398 is a flowchart illustrating an exemplary embodiment of the present invention.

[0481] Fig. 399 is a flowchart illustrating an exemplary embodiment of the present invention.

[0482] Fig. 400 is a flowchart illustrating an exemplary embodiment of the present invention.

[0483] Fig. 401 is a block diagram illustrating an exemplary embodiment of the present invention.

[0484] Fig. 402 is a flowchart illustrating an exemplary embodiment of the present invention.

[0485] Fig. 403 is a flowchart illustrating an exemplary embodiment of the present invention.

[0486] Fig. 404 is a flowchart illustrating an exemplary embodiment of the present invention.

[0487] Fig. 405 is a flowchart illustrating an exemplary embodiment of the present invention.

[0488] Fig. 406 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[0489] Fig. 407 is a flowchart illustrating an exemplary embodiment of the present invention.

[0490] Fig. 408 is a block diagram illustrating an exemplary embodiment of the present invention.

[0491] Fig. 409 is a flowchart illustrating an exemplary embodiment of the present invention.

[0492] Fig. 410 is a flowchart illustrating an exemplary embodiment of the present invention.

[0493] Fig. 411 is a flowchart illustrating an exemplary embodiment of the present invention.

[0494] Fig. 412 is a flowchart illustrating an exemplary embodiment of the present invention.

[0495] Fig. 413 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0496] Fig. 414 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0497] Fig. 415 is a flowchart illustrating an exemplary embodiment of the present invention.

[0498] Fig. 416 is a block diagram illustrating an exemplary embodiment of the present invention.

[0499] Fig. 417 is a block diagram illustrating an exemplary embodiment of the present invention.

[0500] Fig. 418 is a block diagram illustrating an exemplary embodiment of the present invention.

[0501] Fig. 419 is a flowchart illustrating an exemplary embodiment of the present invention.

[0502] Fig. 420 is a flowchart illustrating an exemplary embodiment of the present invention.

[0503] Fig. 421 is a block diagram illustrating an exemplary embodiment of the present invention.

[0504] Fig. 422 is a block diagram illustrating an exemplary embodiment of the present invention.

[0505] Fig. 423 is a block diagram illustrating an exemplary embodiment of the present invention.

[0506] Fig. 424 is a block diagram illustrating an exemplary embodiment of the present invention.

[0507] Fig. 425 is a flowchart illustrating an exemplary embodiment of the present invention.

[0508] Fig. 426 is a flowchart illustrating an exemplary embodiment of the present invention.

[0509] Fig. 427 is a block diagram illustrating an exemplary embodiment of the present invention.

[0510] Fig. 428 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0511] Fig. 429 is a block diagram illustrating an exemplary em-

bodiment of the present invention.

[0512] Fig. 430 is a block diagram illustrating an exemplary embodiment of the present invention.

[0513] Fig. 431 is a block diagram illustrating an exemplary embodiment of the present invention.

[0514] Fig. 432 is a flowchart illustrating an exemplary embodiment of the present invention.

[0515] Fig. 433 is a flowchart illustrating an exemplary embodiment of the present invention.

[0516] Fig. 434 is a block diagram illustrating an exemplary embodiment of the present invention.

[0517] Fig. 435 is a block diagram illustrating an exemplary embodiment of the present invention.

[0518] Fig. 436 is a block diagram illustrating an exemplary embodiment of the present invention.

[0519] Fig. 437 is a block diagram illustrating an exemplary embodiment of the present invention.

[0520] Fig. 438 is a block diagram illustrating an exemplary embodiment of the present invention.

[0521] Fig. 439 is a block diagram illustrating an exemplary embodiment of the present invention.

[0522] Fig. 440 is a block diagram illustrating an exemplary embodiment of the present invention.

[0523] Fig. 441 is a block diagram illustrating an exemplary embodiment of the present invention.

[0524] Fig. 442 is a block diagram illustrating an exemplary embodiment of the present invention.

[0525] Fig. 443 is a block diagram illustrating an exemplary embodiment of the present invention.

[0526] Fig. 444 is a block diagram illustrating an exemplary embodiment of the present invention.

[0527] Fig. 445 is a block diagram illustrating an exemplary embodiment of the present invention.

[0528] Fig. 446 is a block diagram illustrating an exemplary embodiment of the present invention.

[0529] Fig. 447 is a block diagram illustrating an exemplary embodiment of the present invention.

[0530] Fig. 448 is a block diagram illustrating an exemplary embodiment of the present invention.

[0531] Fig. 449 is a flowchart illustrating an exemplary embodiment of the present invention.

[0532] Fig. 450 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0533] Fig. 451 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0534] Fig. 452 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[0535] Fig. 453 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0536] Fig. 454 is a flowchart illustrating an exemplary embodiment of the present invention.

[0537] Fig. 455 is a flowchart illustrating an exemplary embodiment of the present invention.

[0538] Fig. 456 is a flowchart illustrating an exemplary embodiment of the present invention.

[0539] Fig. 457 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0540] Fig. 458 is a block diagram illustrating an exemplary embodiment of the present invention.

[0541] Fig. 459 is a block diagram illustrating an exemplary embodiment of the present invention.

[0542] Fig. 460 is a block diagram illustrating an exemplary embodiment of the present invention.

[0543] Fig. 461 is a block diagram illustrating an exemplary embodiment of the present invention.

[0544] Fig. 462 is a block diagram illustrating an exemplary embodiment of the present invention.

[0545] Fig. 463 is a flowchart illustrating an exemplary embodiment of the present invention.

[0546] Fig. 464 is a flowchart illustrating an exemplary embodiment of the present invention.

[0547] Fig. 465 is a flowchart illustrating an exemplary embodiment of the present invention.

[0548] Fig. 466 is a flowchart illustrating an exemplary embodiment of the present invention.

[0549] Fig. 467a is a block diagram illustrating an exemplary embodiment of the present invention.

[0550] Fig. 467b is a block diagram illustrating an exemplary embodiment of the present invention.

[0551] Fig. 467c is a block diagram illustrating an exemplary embodiment of the present invention.

[0552] Fig. 467d is a block diagram illustrating an exemplary embodiment of the present invention.

[0553] Fig. 468 is a block diagram illustrating an exemplary embodiment of the present invention.

[0554] Fig. 469 is a block diagram illustrating an exemplary embodiment of the present invention.

[0555] Fig. 470 is a block diagram illustrating an exemplary embodiment of the present invention.

[0556] Fig. 471 is a block diagram illustrating an exemplary embodiment of the present invention.

[0557] Fig. 472 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[0558] Fig. 473 is a simplified illustration of data utilized in the present invention.

[0559] Fig. 474 is a block diagram illustrating an exemplary embodiment of the present invention.

[0560] Fig. 475 is a block diagram illustrating an exemplary embodiment of the present invention.

[0561] Fig. 476 is a block diagram illustrating an exemplary embodiment of the present invention.

[0562] Fig. 477 is a block diagram illustrating an exemplary embodiment of the present invention.

[0563] Fig. 478 is a flowchart illustrating an exemplary embodiment of the present invention.

[0564] Fig. 479 is a flowchart illustrating an exemplary embodiment of the present invention.

[0565] Fig. 480 is a block diagram illustrating an exemplary embodiment of the present invention.

[0566] Fig. 481 is a block diagram illustrating an exemplary embodiment of the present invention.

[0567] Fig. 482 is a block diagram illustrating an exemplary embodiment of the present invention.

[0568] Fig. 483 is a block diagram illustrating an exemplary embodiment of the present invention.

[0569] Fig. 484 is a flowchart illustrating an exemplary embodiment of the present invention.

[0570] Fig. 485 is a simplified illustration of data utilized in the present invention.

[0571] Fig. 486 is a block diagram illustrating an exemplary embodiment of the present invention.

[0572] Fig. 487 is a block diagram illustrating an exemplary embodiment of the present invention.

[0573] Fig. 488 is a block diagram illustrating an exemplary embodiment of the present invention.

[0574] Fig. 489 is a block diagram illustrating an exemplary embodiment of the present invention.

[0575] Fig. 490 is a flowchart illustrating an exemplary embodiment of the present invention.

[0576] Fig. 491 is a flowchart illustrating an exemplary embodiment of the present invention.

[0577] Fig. 492 is a block diagram illustrating an exemplary embodiment of the present invention.

[0578] Fig. 493 is a block diagram illustrating an exemplary embodiment of the present invention.

[0579] Fig. 493a is a flowchart illustrating an exemplary embodiment of the present invention.

[0580] Fig. 494 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[0581] Fig. 495 is a block diagram illustrating an exemplary embodiment of the present invention.

[0582] Fig. 496 is a block diagram illustrating an exemplary embodiment of the present invention.

[0583] Fig. 496a is a flowchart illustrating an exemplary embodiment of the present invention.

[0584] Fig. 497 is a flowchart illustrating an exemplary embodiment of the present invention.

[0585] Fig. 498 is a block diagram illustrating an exemplary embodiment of the present invention.

[0586] Fig. 498a is a flowchart illustrating an exemplary embodiment of the present invention.

[0587] Fig. 499 is a flowchart illustrating an exemplary embodiment of the present invention.

[0588] Fig. 500 is a block diagram illustrating an exemplary embodiment of the present invention.

[0589] Fig. 500a is a flowchart illustrating an exemplary embodiment of the present invention.

[0590] Fig. 501 is a flowchart illustrating an exemplary embodiment of the present invention.

[0591] Fig. 502 is a block diagram illustrating an exemplary embodiment of the present invention.

[0592] Fig. 502a is a flowchart illustrating an exemplary embodiment of the present invention.

[0593] Fig. 503 is a flowchart illustrating an exemplary embodiment of the present invention.

[0594] Fig. 504 is a block diagram illustrating an exemplary embodiment of the present invention.

[0595] Fig. 504a is a flowchart illustrating an exemplary embodiment of the present invention.

[0596] Fig. 505 is a flowchart illustrating an exemplary embodiment of the present invention.

[0597] Fig. 506 is a flowchart illustrating an exemplary embodiment of the present invention.

[0598] Fig. 507 is a flowchart illustrating an exemplary embodiment of the present invention.

[0599] Fig. 508 is a block diagram illustrating an exemplary embodiment of the present invention.

[0600] Fig. 508a is a flowchart illustrating an exemplary embodiment of the present invention.

[0601] Fig. 509 is a flowchart illustrating an exemplary embodiment of the present invention.

[0602] Fig. 510 is a flowchart illustrating an exemplary embodiment of the present invention.

[0603] Fig. 511 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[0604] Fig. 512 is a block diagram illustrating an exemplary embodiment of the present invention.

[0605] Fig. 512a is a flowchart illustrating an exemplary embodiment of the present invention.

[0606] Fig. 513 is a flowchart illustrating an exemplary embodiment of the present invention.

[0607] Fig. 514 is a flowchart illustrating an exemplary embodiment of the present invention.

[0608] Fig. 515 is a flowchart illustrating an exemplary embodiment of the present invention.

[0609] Fig. 516 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0610] Fig. 517 is a block diagram illustrating an exemplary embodiment of the present invention.

[0611] Fig. 518 is a block diagram illustrating an exemplary embodiment of the present invention.

[0612] Fig. 519 is a block diagram illustrating an exemplary embodiment of the present invention.

[0613] Fig. 520 is a block diagram illustrating an exemplary embodiment of the present invention.

[0614] Fig. 521 is a flowchart illustrating an exemplary embodiment of the present invention.

[0615] Fig. 522 is a block diagram illustrating an exemplary embodiment of the present invention.

[0616] Fig. 523 is a flowchart illustrating an exemplary embodiment of the present invention.

[0617] Fig. 524 is a flowchart illustrating an exemplary embodiment of the present invention.

[0618] Fig. 525 is a flowchart illustrating an exemplary embodiment of the present invention.

[0619] Fig. 526 is a block diagram illustrating an exemplary embodiment of the present invention.

[0620] Fig. 527 is a flowchart illustrating an exemplary embodiment of the present invention.

[0621] Fig. 528 is a flowchart illustrating an exemplary embodiment of the present invention.

[0622] Fig. 529 is a flowchart illustrating an exemplary embodiment of the present invention.

[0623] Fig. 530 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0624] Fig. 531 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0625] Fig. 532 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0626] Fig. 533 is a simplified illustration illustrating an exem-

plary embodiment of the present invention.

[0627] Fig. 534 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0628] Fig. 535 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0629] Fig. 536 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0630] Fig. 537 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0631] Fig. 538 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0632] Fig. 539 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0633] Fig. 540 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0634] Fig. 541 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0635] Fig. 542 is a block diagram illustrating an exemplary embodiment of the present invention.

[0636] Fig. 543 is a block diagram illustrating an exemplary embodiment of the present invention.

[0637] Fig. 544 is a block diagram illustrating an exemplary embodiment of the present invention.

[0638] Fig. 545 is a block diagram illustrating an exemplary embodiment of the present invention.

[0639] Fig. 545a is a block diagram illustrating an exemplary embodiment of the present invention.

[0640] Fig. 546 is a flowchart illustrating an exemplary embodiment of the present invention.

[0641] Fig. 547 is a block diagram illustrating an exemplary embodiment of the present invention.

[0642] Fig. 548 is a block diagram illustrating an exemplary embodiment of the present invention.

[0643] Fig. 549 is a block diagram illustrating an exemplary embodiment of the present invention.

[0644] Fig. 549a is a block diagram illustrating an exemplary embodiment of the present invention.

[0645] Fig. 550 is a flowchart illustrating an exemplary embodiment of the present invention.

[0646] Fig. 551 is a flowchart illustrating an exemplary embodiment of the present invention.

[0647] Fig. 552 is a flowchart illustrating an exemplary embodiment of the present invention.

[0648] Fig. 553 is a flowchart illustrating an exemplary embodiment of the present invention.

[0649] Fig. 554 is a block diagram illustrating an exemplary em-

bodiment of the present invention.

[0650] Fig. 555 is a block diagram illustrating an exemplary embodiment of the present invention.

[0651] Fig. 556 is a block diagram illustrating an exemplary embodiment of the present invention.

[0652] Fig. 557 is a block diagram illustrating an exemplary embodiment of the present invention.

[0653] Fig. 558 is a flowchart illustrating an exemplary embodiment of the present invention.

[0654] Fig. 559 is a flowchart illustrating an exemplary embodiment of the present invention.

[0655] Fig. 560 is a block diagram illustrating an exemplary embodiment of the present invention.

[0656] Fig. 561 is a block diagram illustrating an exemplary embodiment of the present invention.

[0657] Fig. 562 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0658] Fig. 563 is a flowchart illustrating an exemplary embodiment of the present invention.

[0659] Fig. 564 is a flowchart illustrating an exemplary embodiment of the present invention.

[0660] Fig. 565 is a flowchart illustrating an exemplary embodiment of the present invention.

[0661] Fig. 566 is a flowchart illustrating an exemplary embodiment of the present invention.

[0662] Fig. 567 is a flowchart illustrating an exemplary embodiment of the present invention.

[0663] Fig. 568 is a block diagram illustrating an exemplary embodiment of the present invention.

[0664] Fig. 569 is a block diagram illustrating an exemplary embodiment of the present invention.

[0665] Fig. 570 is a block diagram illustrating an exemplary embodiment of the present invention.

[0666] Fig. 571 is a block diagram illustrating an exemplary embodiment of the present invention.

[0667] Fig. 572 is a flowchart illustrating an exemplary embodiment of the present invention.

[0668] Fig. 573 is a flowchart illustrating an exemplary embodiment of the present invention.

[0669] Fig. 574 is a flowchart illustrating an exemplary embodiment of the present invention.

[0670] Fig. 575 is a block diagram illustrating an exemplary embodiment of the present invention.

[0671] Fig. 576 is a block diagram illustrating an exemplary embodiment of the present invention.

[0672] Fig. 577 is a block diagram illustrating an exemplary em-

bodiment of the present invention.

[0673] Fig. 578 is a block diagram illustrating an exemplary embodiment of the present invention.

[0674] Fig. 579 is a flowchart illustrating an exemplary embodiment of the present invention.

[0675] Fig. 580 is a block diagram illustrating an exemplary embodiment of the present invention.

[0676] Fig. 581 is a block diagram illustrating an exemplary embodiment of the present invention.

[0677] Fig. 582 is a block diagram illustrating an exemplary embodiment of the present invention.

[0678] Fig. 583 is a block diagram illustrating an exemplary embodiment of the present invention.

[0679] Fig. 584 is a block diagram illustrating an exemplary embodiment of the present invention.

[0680] Fig. 585 is a block diagram illustrating an exemplary embodiment of the present invention.

[0681] Fig. 586 is a block diagram illustrating an exemplary embodiment of the present invention.

[0682] Fig. 587 is a block diagram illustrating an exemplary embodiment of the present invention.

[0683] Fig. 588 is a block diagram illustrating an exemplary embodiment of the present invention.

[0684] Fig. 589 is a block diagram illustrating an exemplary embodiment of the present invention.

[0685] Fig. 590 is a block diagram illustrating an exemplary embodiment of the present invention.

[0686] Fig. 591 is a block diagram illustrating an exemplary embodiment of the present invention.

[0687] Fig. 592 is a block diagram illustrating an exemplary embodiment of the present invention.

[0688] Fig. 593 is a block diagram illustrating an exemplary embodiment of the present invention.

[0689] Fig. 594 is a block diagram illustrating an exemplary embodiment of the present invention.

[0690] Fig. 595 is a block diagram illustrating an exemplary embodiment of the present invention.

[0691] Fig. 596 is a block diagram illustrating an exemplary embodiment of the present invention.

[0692] Fig. 597 is a block diagram illustrating an exemplary embodiment of the present invention.

[0693] Fig. 598 is a block diagram illustrating an exemplary embodiment of the present invention.

[0694] Fig. 599 is a block diagram illustrating an exemplary embodiment of the present invention.

[0695] Fig. 600 is a simplified illustration illustrating an exem-

plary embodiment of the present invention.

[0696] Fig. 601 is a flow chart illustrating an exemplary embodiment of the present invention.

[0697] Fig. 601a is a flow chart illustrating an exemplary embodiment of the present invention.

[0698] Fig. 602 is a flow chart illustrating an exemplary embodiment of the present invention.

[0699] Fig. 603 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0700] Fig. 604 is a flow chart illustrating an exemplary embodiment of the present invention.

[0701] Fig. 605 is a flow chart illustrating an exemplary embodiment of the present invention.

[0702] Fig. 606 is a block diagram illustrating an exemplary embodiment of the present invention.

[0703] Fig. 607 is a block diagram illustrating an exemplary embodiment of the present invention.

[0704] Fig. 608 is a block diagram illustrating an exemplary embodiment of the present invention.

[0705] Fig. 609 is a flow chart illustrating an exemplary embodiment of the present invention.

[0706] Fig. 610 is a flow chart illustrating an exemplary embodiment of the present invention.

[0707] Fig. 611 is a flow chart illustrating an exemplary embodiment of the present invention.

[0708] Fig. 612 is a flow chart illustrating an exemplary embodiment of the present invention.

[0709] Fig. 613 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0710] Fig. 614 is a flow chart illustrating an exemplary embodiment of the present invention.

[0711] Fig. 615 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0712] Fig. 616 is a flow chart illustrating an exemplary embodiment of the present invention.

[0713] Fig. 617 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0714] Fig. 618 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0715] Fig. 619 is a flow chart illustrating an exemplary embodiment of the present invention.

[0716] Fig. 619a is a block diagram illustrating an exemplary embodiment of the present invention.

[0717] Fig. 620 is a block diagram illustrating an exemplary embodiment of the present invention.

[0718] Fig. 621 is a block diagram illustrating an exemplary em-

bodiment of the present invention.

[0719] Fig. 622 is a block diagram illustrating an exemplary embodiment of the present invention.

[0720] Fig. 623 is a block diagram illustrating an exemplary embodiment of the present invention.

[0721] Fig. 624 is a block diagram illustrating an exemplary embodiment of the present invention.

[0722] Fig. 625 is a block diagram illustrating an exemplary embodiment of the present invention.

[0723] Fig. 626 is a block diagram illustrating an exemplary embodiment of the present invention.

[0724] Fig. 627 is a block diagram illustrating an exemplary embodiment of the present invention.

[0725] Fig. 628 is a block diagram illustrating an exemplary embodiment of the present invention.

[0726] Fig. 629 is a flow chart illustrating an exemplary embodiment of the present invention.

[0727] Fig. 630 is a simplified illustration of data utilized in the present invention.

[0728] Fig. 631 is a flow chart illustrating an exemplary embodiment of the present invention.

[0729] Fig. 632 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0730] Fig. 633 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0731] Fig. 634 is a block diagram illustrating an exemplary embodiment of the present invention.

[0732] Fig. 635 is a block diagram illustrating an exemplary embodiment of the present invention.

[0733] Fig. 636 is a block diagram illustrating an exemplary embodiment of the present invention.

[0734] Fig. 637 is a block diagram illustrating an exemplary embodiment of the present invention.

[0735] Fig. 638 is a block diagram illustrating an exemplary embodiment of the present invention.

[0736] Fig. 639 is a block diagram illustrating an exemplary embodiment of the present invention.

[0737] Fig. 640 is a block diagram illustrating an exemplary embodiment of the present invention.

[0738] Fig. 641 is a block diagram illustrating an exemplary embodiment of the present invention.

[0739] Fig. 642 is a flowchart illustrating an exemplary embodiment of the present invention.

[0740] Fig. 643 is a simplified illustration of data utilized in the present invention.

[0741] Fig. 644 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[0742] Fig. 645 is a flowchart illustrating an exemplary embodiment of the present invention.

[0743] Fig. 646 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0744] Fig. 647 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0745] Fig. 648 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0746] Fig. 649 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0747] Fig. 650 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0748] Fig.651 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0749] Fig. 652 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0750] Fig. 653 is a block diagram illustrating an exemplary embodiment of the present invention.

[0751] Fig. 654 is a block diagram illustrating an exemplary embodiment of the present invention.

[0752] Fig. 655 is a block diagram illustrating an exemplary embodiment of the present invention.

[0753] Fig. 656 is a block diagram illustrating an exemplary embodiment of the present invention.

[0754] Fig. 657 is a block diagram illustrating an exemplary embodiment of the present invention.

[0755] Fig. 658 is a block diagram illustrating an exemplary embodiment of the present invention.

[0756] Fig. 659 is a block diagram illustrating an exemplary embodiment of the present invention.

[0757] Fig. 660 is a block diagram illustrating an exemplary embodiment of the present invention.

[0758] Fig. 661 is a block diagram illustrating an exemplary embodiment of the present invention.

[0759] Fig. 662 is a flow chart illustrating an exemplary embodiment of the present invention.

[0760] Fig. 663 is a flow chart illustrating an exemplary embodiment of the present invention.

[0761] Fig. 664 is a flow chart illustrating an exemplary embodiment of the present invention.

[0762] Fig. 665 is a simplified illustration of data utilized in the present invention.

[0763] Fig. 666 is a simplified illustration of data utilized in the present invention.

[0764] Fig. 667 is a flow chart illustrating an exemplary embodi-

ment of the present invention.

[0765] Fig. 668 is a flow chart illustrating an exemplary embodiment of the present invention.

[0766] Fig. 669 is a flow chart illustrating an exemplary embodiment of the present invention.

[0767] Fig. 670 is a flow chart illustrating an exemplary embodiment of the present invention.

[0768] Fig. 671 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0769] Fig. 672 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0770] Fig. 673 is a block diagram illustrating an exemplary embodiment of the present invention.

[0771] Fig. 674 is a block diagram illustrating an exemplary embodiment of the present invention.

[0772] Fig. 675 is a block diagram illustrating an exemplary embodiment of the present invention.

[0773] Fig. 676 is a block diagram illustrating an exemplary embodiment of the present invention.

[0774] Fig. 677 is a block diagram illustrating an exemplary embodiment of the present invention.

[0775] Fig. 678 is a block diagram illustrating an exemplary embodiment of the present invention.

[0776] Fig. 679 is a block diagram illustrating an exemplary embodiment of the present invention.

[0777] Fig. 680 is a block diagram illustrating an exemplary embodiment of the present invention.

[0778] Fig. 681 is a block diagram illustrating an exemplary embodiment of the present invention.

[0779] Fig. 682 is a block diagram illustrating an exemplary embodiment of the present invention.

[0780] Fig. 683 is a block diagram illustrating an exemplary embodiment of the present invention.

[0781] Fig. 684 is a block diagram illustrating an exemplary embodiment of the present invention.

[0782] Fig. 685 is a flowchart illustrating an exemplary embodiment of the present invention.

[0783] Fig. 686 is a flowchart illustrating an exemplary embodiment of the present invention.

[0784] Fig. 687 is a flowchart illustrating an exemplary embodiment of the present invention.

[0785] Fig. 688 is a flowchart illustrating an exemplary embodiment of the present invention.

[0786] Fig. 689 is a flowchart illustrating an exemplary embodiment of the present invention.

[0787] Fig. 690 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[0788] Fig. 691 is a simplified illustration of data utilized in the present invention.

[0789] Fig. 692 is a flowchart illustrating an exemplary embodiment of the present invention.

[0790] Fig. 692a is a simplified illustration of data utilized in the present invention.

[0791] Fig. 693 is a flowchart illustrating an exemplary embodiment of the present invention.

[0792] Fig. 694 is a flowchart illustrating an exemplary embodiment of the present invention.

[0793] Fig. 695 is a flowchart illustrating an exemplary embodiment of the present invention.

[0794] Fig. 696 is a flowchart illustrating an exemplary embodiment of the present invention.

[0795] Fig. 697 is a flowchart illustrating an exemplary embodiment of the present invention.

[0796] Fig. 698 is a flowchart illustrating an exemplary embodiment of the present invention.

[0797] Fig. 699 is a flowchart illustrating an exemplary embodiment of the present invention.

[0798] Fig. 700 is a flowchart illustrating an exemplary embodiment of the present invention.

[0799] Fig. 701 is a flowchart illustrating an exemplary embodiment of the present invention.

[0800] Fig. 702 is a block diagram illustrating an exemplary embodiment of the present invention.

[0801] Fig. 703 is a block diagram illustrating an exemplary embodiment of the present invention.

[0802] Fig. 704 is a block diagram illustrating an exemplary embodiment of the present invention.

[0803] Fig. 705 is a block diagram illustrating an exemplary embodiment of the present invention.

[0804] Fig. 706 is a block diagram illustrating an exemplary embodiment of the present invention.

[0805] Fig. 707 is a block diagram illustrating an exemplary embodiment of the present invention.

[0806] Fig. 708 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0807] Fig. 708a is a flowchart illustrating an exemplary embodiment of the present invention.

[0808] Fig. 709 is a flowchart illustrating an exemplary embodiment of the present invention.

[0809] Fig. 710 is a flowchart illustrating an exemplary embodiment of the present invention.

[0810] Fig. 711 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[0811] Fig. 711a is a flowchart illustrating an exemplary embodiment of the present invention.

[0812] Fig. 712 is a flowchart illustrating an exemplary embodiment of the present invention.

[0813] Fig. 713 is a flowchart illustrating an exemplary embodiment of the present invention.

[0814] Fig. 714 is a flowchart illustrating an exemplary embodiment of the present invention.

[0815] Fig. 715 is a flowchart illustrating an exemplary embodiment of the present invention.

[0816] Fig. 716 is a flowchart illustrating an exemplary embodiment of the present invention.

[0817] Fig. 717 is a block diagram illustrating an exemplary embodiment of the present invention.

[0818] Fig. 718 is a block diagram illustrating an exemplary embodiment of the present invention.

[0819] Fig. 719 is a block diagram illustrating an exemplary embodiment of the present invention.

[0820] Fig. 720 is a block diagram illustrating an exemplary embodiment of the present invention.

[0821] Fig. 721 is a block diagram illustrating an exemplary embodiment of the present invention.

[0822] Fig. 722 is a block diagram illustrating an exemplary embodiment of the present invention.

[0823] Fig. 723 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0824] Fig. 723a is a flowchart illustrating an exemplary embodiment of the present invention.

[0825] Fig. 724 is a flowchart illustrating an exemplary embodiment of the present invention.

[0826] Fig. 725 is a flowchart illustrating an exemplary embodiment of the present invention.

[0827] Fig. 726 is a flowchart illustrating an exemplary embodiment of the present invention.

[0828] Fig. 726a is a flowchart illustrating an exemplary embodiment of the present invention.

[0829] Fig. 727 is a flowchart illustrating an exemplary embodiment of the present invention.

[0830] Fig. 728 is a flowchart illustrating an exemplary embodiment of the present invention.

[0831] Fig. 729 is a flowchart illustrating an exemplary embodiment of the present invention.

[0832] Fig. 730 is a flowchart illustrating an exemplary embodiment of the present invention.

[0833] Fig. 731 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[0834] Fig. 732 is a block diagram illustrating an exemplary embodiment of the present invention.

[0835] Fig. 733 is a block diagram illustrating an exemplary embodiment of the present invention.

[0836] Fig. 734 is a block diagram illustrating an exemplary embodiment of the present invention.

[0837] Fig. 735 is a block diagram illustrating an exemplary embodiment of the present invention.

[0838] Fig. 736 is a block diagram illustrating an exemplary embodiment of the present invention.

[0839] Fig. 737 is a block diagram illustrating an exemplary embodiment of the present invention.

[0840] Fig. 738 is a block diagram illustrating an exemplary embodiment of the present invention.

[0841] Fig. 739 is a block diagram illustrating an exemplary embodiment of the present invention.

[0842] Fig. 740 is a block diagram illustrating an exemplary embodiment of the present invention.

[0843] Fig. 741 is a block diagram illustrating an exemplary embodiment of the present invention.

[0844] Fig. 742 is a block diagram illustrating an exemplary embodiment of the present invention.

[0845] Fig. 743 is a flowchart illustrating an exemplary embodiment of the present invention.

[0846] Fig. 744 is a flowchart illustrating an exemplary embodiment of the present invention.

[0847] Fig. 745 is a flowchart illustrating an exemplary embodiment of the present invention.

[0848] Fig. 746 is a flowchart illustrating an exemplary embodiment of the present invention.

[0849] Fig. 747 is a simplified illustration of data utilized in the present invention.

[0850] Fig. 748 is a flowchart illustrating an exemplary embodiment of the present invention.

[0851] Fig. 749 is a flowchart illustrating an exemplary embodiment of the present invention.

[0852] Fig. 750 is a flowchart illustrating an exemplary embodiment of the present invention.

[0853] Fig. 751 is a simplified illustration of data utilized in the present invention.

[0854] Fig. 752 is a flowchart illustrating an exemplary embodiment of the present invention.

[0855] Fig. 753 is a flowchart illustrating an exemplary embodiment of the present invention.

[0856] Fig. 754 is a block diagram illustrating an exemplary em-

bodiment of the present invention.

[0857] Fig. 755 is a block diagram illustrating an exemplary embodiment of the present invention.

[0858] Fig. 756 is a block diagram illustrating an exemplary embodiment of the present invention.

[0859] Fig. 757 is a block diagram illustrating an exemplary embodiment of the present invention.

[0860] Fig. 758 is a block diagram illustrating an exemplary embodiment of the present invention.

[0861] Fig. 759 is a block diagram illustrating an exemplary embodiment of the present invention.

[0862] Fig. 760 is a block diagram illustrating an exemplary embodiment of the present invention.

[0863] Fig. 761 is a block diagram illustrating an exemplary embodiment of the present invention.

[0864] Fig. 762 is a block diagram illustrating an exemplary embodiment of the present invention.

[0865] Fig. 763 is a flowchart illustrating an exemplary embodiment of the present invention.

[0866] Fig. 764 is a flowchart illustrating an exemplary embodiment of the present invention.

[0867] Fig. 765 is a simplified illustration of data utilized in the present invention.

[0868] Fig. 766 is a flowchart illustrating an exemplary embodiment of the present invention.

[0869] Fig. 767 is a flowchart illustrating an exemplary embodiment of the present invention.

[0870] Fig. 768 is a simplified illustration of data utilized in the present invention.

[0871] Fig. 769 is a flowchart illustrating an exemplary embodiment of the present invention.

[0872] Fig. 770 is a flowchart illustrating an exemplary embodiment of the present invention.

[0873] Fig. 771 is a simplified illustration of data utilized in the present invention.

[0874] Fig. 772 is a flowchart illustrating an exemplary embodiment of the present invention.

[0875] Fig. 773 is a flowchart illustrating an exemplary embodiment of the present invention.

[0876] Fig. 774 is a flowchart illustrating an exemplary embodiment of the present invention.

[0877] Fig. 775 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0878] Fig. 776 is a block diagram illustrating an exemplary embodiment of the present invention.

[0879] Fig. 777 is a block diagram illustrating an exemplary em-

bodiment of the present invention.

[0880] Fig. 778 is a block diagram illustrating an exemplary embodiment of the present invention.

[0881] Fig. 779 is a block diagram illustrating an exemplary embodiment of the present invention.

[0882] Fig. 780 is a block diagram illustrating an exemplary embodiment of the present invention.

[0883] Fig. 781 is a block diagram illustrating an exemplary embodiment of the present invention.

[0884] Fig. 782 is a flowchart illustrating an exemplary embodiment of the present invention.

[0885] Fig. 783 is a flowchart illustrating an exemplary embodiment of the present invention.

[0886] Fig. 784 is a flowchart illustrating an exemplary embodiment of the present invention.

[0887] Fig. 785 is a flowchart illustrating an exemplary embodiment of the present invention.

[0888] Fig. 786 is a flowchart illustrating an exemplary embodiment of the present invention.

[0889] Fig. 787 is a block diagram illustrating an exemplary embodiment of the present invention.

[0890] Fig. 788 is a block diagram illustrating an exemplary embodiment of the present invention.

[0891] Fig. 789 is a block diagram illustrating an exemplary embodiment of the present invention.

[0892] Fig. 790 is a block diagram illustrating an exemplary embodiment of the present invention.

[0893] Fig. 791 is a block diagram illustrating an exemplary embodiment of the present invention.

[0894] Fig. 792 is a block diagram illustrating an exemplary embodiment of the present invention.

[0895] Fig. 793 is a flowchart illustrating an exemplary embodiment of the present invention.

[0896] Fig. 794 is a flowchart illustrating an exemplary embodiment of the present invention.

[0897] Fig. 795 is a block diagram illustrating an exemplary embodiment of the present invention.

[0898] Fig. 796 is a block diagram illustrating an exemplary embodiment of the present invention.

[0899] Fig. 797 is a block diagram illustrating an exemplary embodiment of the present invention.

[0900] Fig. 798 is a block diagram illustrating an exemplary embodiment of the present invention.

[0901] Fig. 799 is a block diagram illustrating an exemplary embodiment of the present invention.

[0902] Fig. 800 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[0903] Fig. 801 is a flowchart illustrating an exemplary embodiment of the present invention.

[0904] Fig. 802 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0905] Fig. 803 is a block diagram illustrating an exemplary embodiment of the present invention.

[0906] Fig. 804 is a block diagram illustrating an exemplary embodiment of the present invention.

[0907] Fig. 805 is a block diagram illustrating an exemplary embodiment of the present invention.

[0908] Fig. 806 is a block diagram illustrating an exemplary embodiment of the present invention.

[0909] Fig. 807 is a block diagram illustrating an exemplary embodiment of the present invention.

[0910] Fig. 808 is a block diagram illustrating an exemplary embodiment of the present invention.

[0911] Fig. 809 is a block diagram illustrating an exemplary embodiment of the present invention.

[0912] Fig. 810 is a block diagram illustrating an exemplary embodiment of the present invention.

[0913] Fig. 811 is a block diagram illustrating an exemplary embodiment of the present invention.

[0914] Fig. 812 is a block diagram illustrating an exemplary embodiment of the present invention.

[0915] Fig. 813 is a block diagram illustrating an exemplary embodiment of the present invention.

[0916] Fig. 814 is a block diagram illustrating an exemplary embodiment of the present invention.

[0917] Fig. 815 is a block diagram illustrating an exemplary embodiment of the present invention.

[0918] Fig. 816 is a block diagram illustrating an exemplary embodiment of the present invention.

[0919] Fig. 817 is a block diagram illustrating an exemplary embodiment of the present invention.

[0920] Fig. 818 is a block diagram illustrating an exemplary embodiment of the present invention.

[0921] Fig. 819 is a flowchart illustrating an exemplary embodiment of the present invention.

[0922] Fig. 820 is a flowchart illustrating an exemplary embodiment of the present invention.

[0923] Fig. 821 is a flowchart illustrating an exemplary embodiment of the present invention.

[0924] Fig. 822 is a simplified illustration of data utilized in the present invention.

[0925] Fig. 823 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[0926] Fig. 824 is a flowchart illustrating an exemplary embodiment of the present invention.

[0927] Fig. 825 is a flowchart illustrating an exemplary embodiment of the present invention.

[0928] Fig. 826 is a flowchart illustrating an exemplary embodiment of the present invention.

[0929] Fig. 827 is a flowchart illustrating an exemplary embodiment of the present invention.

[0930] Fig. 828 is a simplified illustration of data utilized in the present invention.

[0931] Fig. 829 is a flowchart illustrating an exemplary embodiment of the present invention.

[0932] Fig. 830 is a flowchart illustrating an exemplary embodiment of the present invention.

[0933] Fig. 831 is a flowchart illustrating an exemplary embodiment of the present invention.

[0934] Fig. 832 lis a simplified illustration illustrating an exemplary embodiment of the present invention.

[0935] Fig. 833a is a block diagram illustrating an exemplary embodiment of the present invention.

[0936] Fig. 833b is a block diagram illustrating an exemplary embodiment of the present invention.

[0937] Fig. 833c is a block diagram illustrating an exemplary embodiment of the present invention.

[0938] Fig. 833d is a block diagram illustrating an exemplary embodiment of the present invention.

[0939] Fig. 833e is a block diagram illustrating an exemplary embodiment of the present invention.

[0940] Fig. 833f is a block diagram illustrating an exemplary embodiment of the present invention.

[0941] Fig. 833g is a block diagram illustrating an exemplary embodiment of the present invention.

[0942] Fig. 833h is a block diagram illustrating an exemplary embodiment of the present invention.

[0943] Fig. 833i is a block diagram illustrating an exemplary embodiment of the present invention.

[0944] Fig. 833j is a block diagram illustrating an exemplary embodiment of the present invention.

[0945] Fig. 833k is a block diagram illustrating an exemplary embodiment of the present invention.

[0946] Fig. 833l is a block diagram illustrating an exemplary embodiment of the present invention.

[0947] Fig. 833m is a block diagram illustrating an exemplary embodiment of the present invention.

[0948] Fig. 833n is a block diagram illustrating an exemplary

embodiment of the present invention.

[0949] Fig. 833o is a block diagram illustrating an exemplary embodiment of the present invention.

[0950] Fig. 833p is a block diagram illustrating an exemplary embodiment of the present invention.

[0951] Fig. 833q is a block diagram illustrating an exemplary embodiment of the present invention.

[0952] Fig. 833r is a block diagram illustrating an exemplary embodiment of the present invention.

[0953] Fig. 833s is a block diagram illustrating an exemplary embodiment of the present invention.

[0954] Fig. 833t is a block diagram illustrating an exemplary embodiment of the present invention.

[0955] Fig. 833u is a block diagram illustrating an exemplary embodiment of the present invention.

[0956] Fig. 833v is a block diagram illustrating an exemplary embodiment of the present invention.

[0957] Fig. 833w is a block diagram illustrating an exemplary embodiment of the present invention.

[0958] Fig. 833x is a block diagram illustrating an exemplary embodiment of the present invention.

[0959] Fig. 834 is a block diagram illustrating an exemplary embodiment of the present invention.

[0960] Fig. 835 is a block diagram illustrating an exemplary embodiment of the present invention.

[0961] Fig. 836 is a block diagram illustrating an exemplary embodiment of the present invention.

[0962] Fig. 837 is a block diagram illustrating an exemplary embodiment of the present invention.

[0963] Fig. 838 is a block diagram illustrating an exemplary embodiment of the present invention.

[0964] Fig. 839 is a block diagram illustrating an exemplary embodiment of the present invention.

[0965] Fig. 840 is a block diagram illustrating an exemplary embodiment of the present invention.

[0966] Fig. 841 is a block diagram illustrating an exemplary embodiment of the present invention.

[0967] Fig. 842 is a block diagram illustrating an exemplary embodiment of the present invention.

[0968] Fig. 843 is a block diagram illustrating an exemplary embodiment of the present invention.

[0969] Fig. 844 is a block diagram illustrating an exemplary embodiment of the present invention.

[0970] Fig. 845 is a flowchart illustrating an exemplary embodiment of the present invention.

[0971] Fig. 846 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[0972] Fig. 847 is a simplified illustration of data utilized in the present invention.

[0973] Fig. 848 is a flowchart illustrating an exemplary embodiment of the present invention.

[0974] Fig. 849 is a simplified illustration of data utilized in the present invention.

[0975] Fig. 850 is a flowchart illustrating an exemplary embodiment of the present invention.

[0976] Fig. 851 is a flowchart illustrating an exemplary embodiment of the present invention.

[0977] Fig. 852 is a flowchart illustrating an exemplary embodiment of the present invention.

[0978] Fig. 853 is a flowchart illustrating an exemplary embodiment of the present invention.

[0979] Fig. 854 is a flowchart illustrating an exemplary embodiment of the present invention.

[0980] Fig. 855 is a flowchart illustrating an exemplary embodiment of the present invention.

[0981] Fig. 856 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[0982] Fig. 857 is a block diagram illustrating an exemplary embodiment of the present invention.

[0983] Fig. 858 is a block diagram illustrating an exemplary embodiment of the present invention.

[0984] Fig. 859 is a block diagram illustrating an exemplary embodiment of the present invention.

[0985] Fig. 859a is a block diagram illustrating an exemplary embodiment of the present invention.

[0986] Fig. 860 is a block diagram illustrating an exemplary embodiment of the present invention.

[0987] Fig. 861 is a block diagram illustrating an exemplary embodiment of the present invention.

[0988] Fig. 862 is a block diagram illustrating an exemplary embodiment of the present invention.

[0989] Fig. 863 is a block diagram illustrating an exemplary embodiment of the present invention.

[0990] Fig. 864 is a block diagram illustrating an exemplary embodiment of the present invention.

[0991] Fig. 865 is a block diagram illustrating an exemplary embodiment of the present invention.

[0992] Fig. 866 is a block diagram illustrating an exemplary embodiment of the present invention.

[0993] Fig. 867 is a block diagram illustrating an exemplary embodiment of the present invention.

[0994] Fig. 868 is a block diagram illustrating an exemplary em-

bodiment of the present invention.

[0995] Fig. 869 is a block diagram illustrating an exemplary embodiment of the present invention.

[0996] Fig. 870 is a block diagram illustrating an exemplary embodiment of the present invention.

[0997] Fig. 871 is a flowchart illustrating an exemplary embodiment of the present invention.

[0998] Fig. 872 is a flowchart illustrating an exemplary embodiment of the present invention.

[0999] Fig. 873 is a flowchart illustrating an exemplary embodiment of the present invention.

[1000] Fig. 874 is a flowchart illustrating an exemplary embodiment of the present invention.

[1001] Fig. 875 is a flowchart illustrating an exemplary embodiment of the present invention.

[1002] Fig. 876 is a flowchart illustrating an exemplary embodiment of the present invention.

[1003] Fig. 877 is a flowchart illustrating an exemplary embodiment of the present invention.

[1004] Fig. 878 is a flowchart illustrating an exemplary embodiment of the present invention.

[1005] Fig. 879 is a flowchart illustrating an exemplary embodiment of the present invention.

[1006] Fig. 880 is a flowchart illustrating an exemplary embodiment of the present invention.

[1007] Fig. 881 is a flowchart illustrating an exemplary embodiment of the present invention.

[1008] Fig. 882 is a flowchart illustrating an exemplary embodiment of the present invention.

[1009] Fig. 883 is a block diagram illustrating an exemplary embodiment of the present invention.

[1010] Fig. 884 is a block diagram illustrating an exemplary embodiment of the present invention.

[1011] Fig. 885 is a block diagram illustrating an exemplary embodiment of the present invention.

[1012] Fig. 886 is a block diagram illustrating an exemplary embodiment of the present invention.

[1013] Fig. 887 is a flowchart illustrating an exemplary embodiment of the present invention.

[1014] Fig. 888 is a flowchart illustrating an exemplary embodiment of the present invention.

[1015] Fig. 889 is a flowchart illustrating an exemplary embodiment of the present invention.

[1016] Fig. 890 is a flowchart illustrating an exemplary embodiment of the present invention.

[1017] Fig. 891 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[1018] Fig. 892 is a flowchart illustrating an exemplary embodiment of the present invention.

[1019] Fig. 893 is a flowchart illustrating an exemplary embodiment of the present invention.

[1020] Fig. 894 is a flowchart illustrating an exemplary embodiment of the present invention.

[1021] Fig. 894a is a block diagram illustrating an exemplary embodiment of the present invention.

[1022] Fig. 895 is a block diagram illustrating an exemplary embodiment of the present invention.

[1023] Fig. 896 is a block diagram illustrating an exemplary embodiment of the present invention.

[1024] Fig. 897 is a block diagram illustrating an exemplary embodiment of the present invention.

[1025] Fig. 898 is a block diagram illustrating an exemplary embodiment of the present invention.

[1026] Fig. 899 is a block diagram illustrating an exemplary embodiment of the present invention.

[1027] Fig. 900 is a block diagram illustrating an exemplary embodiment of the present invention.

[1028] Fig. 901 is a flowchart illustrating an exemplary embodiment of the present invention.

[1029] Fig. 902 is a flowchart illustrating an exemplary embodiment of the present invention.

[1030] Fig. 903 is a flowchart illustrating an exemplary embodiment of the present invention.

[1031] Fig. 904 is a flowchart illustrating an exemplary embodiment of the present invention.

[1032] Fig. 905 is a flowchart illustrating an exemplary embodiment of the present invention.

[1033] Fig. 906 is a block diagram illustrating an exemplary embodiment of the present invention.

[1034] Fig. 907 is a block diagram illustrating an exemplary embodiment of the present invention.

[1035] Fig. 908 is a block diagram illustrating an exemplary embodiment of the present invention.

[1036] Fig. 909 is a block diagram illustrating an exemplary embodiment of the present invention.

[1037] Fig. 910 is a block diagram illustrating an exemplary embodiment of the present invention.

[1038] Fig. 911 is a block diagram illustrating an exemplary embodiment of the present invention.

[1039] Fig. 912 is a block diagram illustrating an exemplary embodiment of the present invention.

[1040] Fig. 913 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[1041] Fig. 914 is a flowchart illustrating an exemplary embodiment of the present invention.

[1042] Fig. 915 is a flowchart illustrating an exemplary embodiment of the present invention.

[1043] Fig. 916 is a flowchart illustrating an exemplary embodiment of the present invention.

[1044] Fig. 917 is a flowchart illustrating an exemplary embodiment of the present invention.

[1045] Fig. 918 is a block diagram illustrating an exemplary embodiment of the present invention.

[1046] Fig. 919 is a block diagram illustrating an exemplary embodiment of the present invention.

[1047] Fig. 920 is a block diagram illustrating an exemplary embodiment of the present invention.

[1048] Fig. 921 is a block diagram illustrating an exemplary embodiment of the present invention.

[1049] Fig. 922 is a flowchart illustrating an exemplary embodiment of the present invention.

[1050] Fig. 923 is a flowchart illustrating an exemplary embodiment of the present invention.

[1051] Fig. 924 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1052] Fig. 925 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1053] Fig. 926 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1054] Fig. 927 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1055] Fig. 928 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1056] Fig. 929 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1057] Fig. 930 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1058] Fig. 931 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1059] Fig. 932 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1060] Fig. 933 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1061] Fig. 934 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1062] Fig. 935 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1063] Fig. 936 is a block diagram illustrating an exemplary em-

bodiment of the present invention.

[1064] Fig. 937 is a block diagram illustrating an exemplary embodiment of the present invention.

[1065] Fig. 938 is a block diagram illustrating an exemplary embodiment of the present invention.

[1066] Fig. 939 is a block diagram illustrating an exemplary embodiment of the present invention.

[1067] Fig. 939a is a block diagram illustrating an exemplary embodiment of the present invention.

[1068] Fig. 940 is a flowchart illustrating an exemplary embodiment of the present invention.

[1069] Fig. 941 is a block diagram illustrating an exemplary embodiment of the present invention.

[1070] Fig. 942 is a block diagram illustrating an exemplary embodiment of the present invention.

[1071] Fig. 943 is a block diagram illustrating an exemplary embodiment of the present invention.

[1072] Fig. 943a is a flowchart illustrating an exemplary embodiment of the present invention.

[1073] Fig. 943b is a flowchart illustrating an exemplary embodiment of the present invention.

[1074] Fig. 944 is a flowchart illustrating an exemplary embodiment of the present invention.

[1075] Fig. 945 is a flowchart illustrating an exemplary embodiment of the present invention.

[1076] Fig. 946 is a flowchart illustrating an exemplary embodiment of the present invention.

[1077] Fig. 947 is a flowchart illustrating an exemplary embodiment of the present invention.

[1078] Fig. 948 is a flowchart illustrating an exemplary embodiment of the present invention.

[1079] Fig. 949 is a flowchart illustrating an exemplary embodiment of the present invention.

[1080] Fig. 949a is a flowchart illustrating an exemplary embodiment of the present invention.

[1081] Fig. 950 is a flowchart illustrating an exemplary embodiment of the present invention.

[1082] Fig. 950a is a flowchart illustrating an exemplary embodiment of the present invention.

[1083] Fig. 950b is a flowchart illustrating an exemplary embodiment of the present invention.

[1084] Fig. 950c is a flowchart illustrating an exemplary embodiment of the present invention.

[1085] Fig. 950d is a flowchart illustrating an exemplary embodiment of the present invention.

[1086] Fig. 950e is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[1087] Fig. 950f is a flowchart illustrating an exemplary embodiment of the present invention.

[1088] Fig. 951 is a block diagram illustrating an exemplary embodiment of the present invention.

[1089] Fig. 951a is a block diagram illustrating an exemplary embodiment of the present invention.

[1090] Fig. 952 is a block diagram illustrating an exemplary embodiment of the present invention.

[1091] Fig. 953 is a block diagram illustrating an exemplary embodiment of the present invention.

[1092] Fig. 954 is a block diagram illustrating an exemplary embodiment of the present invention.

[1093] Fig. 955 is a block diagram illustrating an exemplary embodiment of the present invention.

[1094] Fig. 956 is a flowchart illustrating an exemplary embodiment of the present invention.

[1095] Fig. 957 is a flowchart illustrating an exemplary embodiment of the present invention.

[1096] Fig. 958 is a flowchart illustrating an exemplary embodiment of the present invention.

[1097] Fig. 959 is a flowchart illustrating an exemplary embodiment of the present invention.

[1098] Fig. 960 is a flowchart illustrating an exemplary embodiment of the present invention.

[1099] Fig. 961 is a flowchart illustrating an exemplary embodiment of the present invention.

[1100] Fig. 962 is a flowchart illustrating an exemplary embodiment of the present invention.

[1101] Fig. 963 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1102] Fig. 964 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1103] Fig. 965 is a flowchart illustrating an exemplary embodiment of the present invention.

[1104] Fig. 966 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1105] Fig. 967 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1106] Fig. 968 is a flowchart illustrating an exemplary embodiment of the present invention.

[1107] Fig. 968a is a block diagram illustrating an exemplary embodiment of the present invention.

[1108] Fig. 969 is a block diagram illustrating an exemplary embodiment of the present invention.

[1109] Fig. 970 is a block diagram illustrating an exemplary em-

bodiment of the present invention.

[1110] Fig. 971 is a block diagram illustrating an exemplary embodiment of the present invention.

[1111] Fig. 972 is a block diagram illustrating an exemplary embodiment of the present invention.

[1112] Fig. 973 is a flowchart illustrating an exemplary embodiment of the present invention.

[1113] Fig. 974 is a flowchart illustrating an exemplary embodiment of the present invention.

[1114] Fig. 975 is a flowchart illustrating an exemplary embodiment of the present invention.

[1115] Fig. 976 is a flowchart illustrating an exemplary embodiment of the present invention.

[1116] Fig. 977 is a flowchart illustrating an exemplary embodiment of the present invention.

[1117] Fig. 978 is a flowchart illustrating an exemplary embodiment of the present invention.

[1118] Fig. 979 is a flowchart illustrating an exemplary embodiment of the present invention.

[1119] Fig. 980 is a flowchart illustrating an exemplary embodiment of the present invention.

[1120] Fig. 981 is a flowchart illustrating an exemplary embodiment of the present invention.

[1121] Fig. 982 is a flowchart illustrating an exemplary embodiment of the present invention.

[1122] Fig. 983 is a flowchart illustrating an exemplary embodiment of the present invention.

[1123] Fig. 984 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1124] Fig. 985 is a block diagram illustrating an exemplary embodiment of the present invention.

[1125] Fig. 986 is a block diagram illustrating an exemplary embodiment of the present invention.

[1126] Fig. 987 is a block diagram illustrating an exemplary embodiment of the present invention.

[1127] Fig. 988 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1128] Fig. 989 is a block diagram illustrating an exemplary embodiment of the present invention.

[1129] Fig. 990 is a block diagram illustrating an exemplary embodiment of the present invention.

[1130] Fig. 991 is a flowchart illustrating an exemplary embodiment of the present invention.

[1131] Fig. 992 is a flowchart illustrating an exemplary embodiment of the present invention.

[1132] Fig. 993 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[1133] Fig. 994 is a flowchart illustrating an exemplary embodiment of the present invention.

[1134] Fig. 995 is a flowchart illustrating an exemplary embodiment of the present invention.

[1135] Fig. 996 is a block diagram illustrating an exemplary embodiment of the present invention.

[1136] Fig. 997 is a block diagram illustrating an exemplary embodiment of the present invention.

[1137] Fig. 998 is a block diagram illustrating an exemplary embodiment of the present invention.

[1138] Fig. 999 is a block diagram illustrating an exemplary embodiment of the present invention.

[1139] Fig. 1000 is a block diagram illustrating an exemplary embodiment of the present invention.

[1140] Fig. 1001 is a block diagram illustrating an exemplary embodiment of the present invention.

[1141] Fig. 1002 is a flowchart illustrating an exemplary embodiment of the present invention.

[1142] Fig. 1003 is a flowchart illustrating an exemplary embodiment of the present invention.

[1143] Fig. 1004 is a flowchart illustrating an exemplary embodiment of the present invention.

[1144] Fig. 1005 is a flowchart illustrating an exemplary embodiment of the present invention.

[1145] Fig. 1006 is a flowchart illustrating an exemplary embodiment of the present invention.

[1146] Fig. 1007 is a flowchart illustrating an exemplary embodiment of the present invention.

[1147] Fig. 1008 is a flowchart illustrating an exemplary embodiment of the present invention.

[1148] Fig. 1009 is a flowchart illustrating an exemplary embodiment of the present invention.

[1149] Fig. 1010 is a flowchart illustrating an exemplary embodiment of the present invention.

[1150] Fig. 1011 is a flowchart illustrating an exemplary embodiment of the present invention.

[1151] Fig. 1012 is a flowchart illustrating an exemplary embodiment of the present invention.

[1152] Fig. 1013 is a flowchart illustrating an exemplary embodiment of the present invention.

[1153] Fig. 1014 is a flowchart illustrating an exemplary embodiment of the present invention.

[1154] Fig. 1015 is a flowchart illustrating an exemplary embodiment of the present invention.

[1155] Fig. 1016 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[1156] Fig. 1017 is a flowchart illustrating an exemplary embodiment of the present invention.

[1157] Fig. 1018 is a flowchart illustrating an exemplary embodiment of the present invention.

[1158] Fig. 1019 is a flowchart illustrating an exemplary embodiment of the present invention.

[1159] Fig. 1020 is a flowchart illustrating an exemplary embodiment of the present invention.

[1160] Fig. 1021 is a flowchart illustrating an exemplary embodiment of the present invention.

[1161] Fig. 1022 is a block diagram illustrating an exemplary embodiment of the present invention.

[1162] Fig. 1023 is a block diagram illustrating an exemplary embodiment of the present invention.

[1163] Fig. 1024 is a block diagram illustrating an exemplary embodiment of the present invention.

[1164] Fig. 1025 is a block diagram illustrating an exemplary embodiment of the present invention.

[1165] Fig. 1026 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1166] Fig.1027 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1167] Fig.1028 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1168] Fig.1029 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1169] Fig.1030 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1170] Fig.1031 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1171] Fig.1032 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1172] Fig.1033 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1173] Fig.1034 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1174] Fig.1035 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1175] Fig.1036 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1176] Fig.1037 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1177] Fig.1038 is a block diagram illustrating an exemplary embodiment of the present invention.

[1178] Fig.1039 is a block diagram illustrating an exemplary em-

bodiment of the present invention.

[1179] Fig.1040 is a block diagram illustrating an exemplary embodiment of the present invention.

[1180] Fig.1041 is a block diagram illustrating an exemplary embodiment of the present invention.

[1181] Fig.1042 is a block diagram illustrating an exemplary embodiment of the present invention.

[1182] Fig.1043 is a block diagram illustrating an exemplary embodiment of the present invention.

[1183] Fig.1044 is a block diagram illustrating an exemplary embodiment of the present invention.

[1184] Fig.1045 is a block diagram illustrating an exemplary embodiment of the present invention.

[1185] Fig.1046 is a block diagram illustrating an exemplary embodiment of the present invention.

[1186] Fig.1047 is a block diagram illustrating an exemplary embodiment of the present invention.

[1187] Fig.1048 is a block diagram illustrating an exemplary embodiment of the present invention.

[1188] Fig.1049 is a block diagram illustrating an exemplary embodiment of the present invention.

[1189] Fig.1050 is a block diagram illustrating an exemplary embodiment of the present invention.

[1190] Fig.1051 is a block diagram illustrating an exemplary embodiment of the present invention.

[1191] Fig.1052 is a block diagram illustrating an exemplary embodiment of the present invention.

[1192] Fig.1053 is a block diagram illustrating an exemplary embodiment of the present invention.

[1193] Fig.1054 is a block diagram illustrating an exemplary embodiment of the present invention.

[1194] Fig.1055 is a block diagram illustrating an exemplary embodiment of the present invention.

[1195] Fig.1056 is a block diagram illustrating an exemplary embodiment of the present invention.

[1196] Fig.1057 is a block diagram illustrating an exemplary embodiment of the present invention.

[1197] Fig.1058 is a block diagram illustrating an exemplary embodiment of the present invention.

[1198] Fig.1059 is a block diagram illustrating an exemplary embodiment of the present invention.

[1199] Fig.1060 is a flowchart illustrating an exemplary embodiment of the present invention.

[1200] Fig.1061 is a simplified illustration of data utilized in the present invention.

[1201] Fig.1062 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[1202] Fig.1063 is a flowchart illustrating an exemplary embodiment of the present invention.

[1203] Fig.1064 is a flowchart illustrating an exemplary embodiment of the present invention.

[1204] Fig.1065 is a simplified illustration of data utilized in the present invention.

[1205] Fig.1066 is a flowchart illustrating an exemplary embodiment of the present invention.

[1206] Fig.1067 is a flowchart illustrating an exemplary embodiment of the present invention.

[1207] Fig.1068 is a flowchart illustrating an exemplary embodiment of the present invention.

[1208] Fig.1069 is a flowchart illustrating an exemplary embodiment of the present invention.

[1209] Fig.1070 is a flowchart illustrating an exemplary embodiment of the present invention.

[1210] Fig.1071 is a flowchart illustrating an exemplary embodiment of the present invention.

[1211] Fig.1072 is a flowchart illustrating an exemplary embodiment of the present invention.

[1212] Fig.1073 is a flowchart illustrating an exemplary embodiment of the present invention.

[1213] Fig.1074 is a flowchart illustrating an exemplary embodiment of the present invention.

[1214] Fig.1075 is a flowchart illustrating an exemplary embodiment of the present invention.

[1215] Fig.1076 is a flowchart illustrating an exemplary embodiment of the present invention.

[1216] Fig.1077 is a flowchart illustrating an exemplary embodiment of the present invention.

[1217] Fig.1078 is a flowchart illustrating an exemplary embodiment of the present invention.

[1218] Fig.1079 is a flowchart illustrating an exemplary embodiment of the present invention.

[1219] Fig.1080 is a flowchart illustrating an exemplary embodiment of the present invention.

[1220] Fig.1081 is a flowchart illustrating an exemplary embodiment of the present invention.

[1221] Fig.1082 is a block diagram illustrating an exemplary embodiment of the present invention.

[1222] Fig.1083 is a block diagram illustrating an exemplary embodiment of the present invention.

[1223] Fig.1084 is a flowchart illustrating an exemplary embodiment of the present invention.

[1224] Fig.1085 is a block diagram illustrating an exemplary em-

bodiment of the present invention.

[1225] Fig.1086 is a flowchart illustrating an exemplary embodiment of the present invention.

[1226] Fig.1087 is a flowchart illustrating an exemplary embodiment of the present invention.

[1227] Fig.1088 is a flowchart illustrating an exemplary embodiment of the present invention.

[1228] Fig.1089 is a flowchart illustrating an exemplary embodiment of the present invention.

[1229] Fig.1090 is a flowchart illustrating an exemplary embodiment of the present invention.

[1230] Fig.1091 is a flowchart illustrating an exemplary embodiment of the present invention.

[1231] Fig.1092 is a flowchart illustrating an exemplary embodiment of the present invention.

[1232] Fig.1093 is a flowchart illustrating an exemplary embodiment of the present invention.

[1233] Fig.1094 is a flowchart illustrating an exemplary embodiment of the present invention.

[1234] Fig.1095 is a flowchart illustrating an exemplary embodiment of the present invention.

[1235] Fig.1096 is a flowchart illustrating an exemplary embodiment of the present invention.

[1236] Fig.1097 is a flowchart illustrating an exemplary embodiment of the present invention.

[1237] Fig.1098 is a flowchart illustrating an exemplary embodiment of the present invention.

[1238] Fig.1099 is a flowchart illustrating an exemplary embodiment of the present invention.

[1239] Fig.1100 is a flowchart illustrating an exemplary embodiment of the present invention.

[1240] Fig.1101 is a flowchart illustrating an exemplary embodiment of the present invention.

[1241] Fig.1102 is a flowchart illustrating an exemplary embodiment of the present invention.

[1242] Fig.1103 is a block diagram illustrating an exemplary embodiment of the present invention.

[1243] Fig.1104 is a block diagram illustrating an exemplary embodiment of the present invention.

[1244] Fig.1105 is a block diagram illustrating an exemplary embodiment of the present invention.

[1245] Fig.1106 is a flowchart illustrating an exemplary embodiment of the present invention.

[1246] Fig.1107 is a simplified illustration of data utilized in the present invention.

[1247] Fig.1108 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[1248] Fig.1109 is a flowchart illustrating an exemplary embodiment of the present invention.

[1249] Fig.1110 is a flowchart illustrating an exemplary embodiment of the present invention.

[1250] Fig.1111 is a flowchart illustrating an exemplary embodiment of the present invention.

[1251] Fig.1112 is a flowchart illustrating an exemplary embodiment of the present invention.

[1252] Fig.1113 is a flowchart illustrating an exemplary embodiment of the present invention.

[1253] Fig.1114 is a flowchart illustrating an exemplary embodiment of the present invention.

[1254] Fig.1115 is a flowchart illustrating an exemplary embodiment of the present invention.

[1255] Fig.1116 is a simplified illustration of data utilized in the present invention.

[1256] Fig.1117 is a flowchart illustrating an exemplary embodiment of the present invention.

[1257] Fig.1118 is a flowchart illustrating an exemplary embodiment of the present invention.

[1258] Fig.1119 is a flowchart illustrating an exemplary embodiment of the present invention.

[1259] Fig.1120 is a flowchart illustrating an exemplary embodiment of the present invention.

[1260] Fig.1121 is a flowchart illustrating an exemplary embodiment of the present invention.

[1261] Fig.1122 is a flowchart illustrating an exemplary embodiment of the present invention.

[1262] Fig.1123 is a flowchart illustrating an exemplary embodiment of the present invention.

[1263] Fig.1124 is a flowchart illustrating an exemplary embodiment of the present invention.

[1264] Fig.1125 is a simplified illustration of data utilized in the present invention.

[1265] Fig.1126 is a flowchart illustrating an exemplary embodiment of the present invention.

[1266] Fig.1127 is a flowchart illustrating an exemplary embodiment of the present invention.

[1267] Fig.1128 is a flowchart illustrating an exemplary embodiment of the present invention.

[1268] Fig.1129 is a block diagram illustrating an exemplary embodiment of the present invention.

[1269] Fig.1130 is a block diagram illustrating an exemplary embodiment of the present invention.

[1270] Fig.1131 is a block diagram illustrating an exemplary em-

bodiment of the present invention.

[1271] Fig.1131a is a block diagram illustrating an exemplary embodiment of the present invention.

[1272] Fig.1132 is a flowchart illustrating an exemplary embodiment of the present invention.

[1273] Fig.1133 is a simplified illustration of data utilized in the present invention.

[1274] Fig.1134 is a flowchart illustrating an exemplary embodiment of the present invention.

[1275] Fig.1135 is a flowchart illustrating an exemplary embodiment of the present invention.

[1276] Fig.1136 is a flowchart illustrating an exemplary embodiment of the present invention.

[1277] Fig.1137 is a flowchart illustrating an exemplary embodiment of the present invention.

[1278] Fig.1138 is a flowchart illustrating an exemplary embodiment of the present invention.

[1279] Fig.1139 is a flowchart illustrating an exemplary embodiment of the present invention.

[1280] Fig.1140 is a flowchart illustrating an exemplary embodiment of the present invention.

[1281] Fig.1141 is a simplified illustration of data utilized in the present invention.

[1282] Fig.1142 is a flowchart illustrating an exemplary embodiment of the present invention.

[1283] Fig.1143 is a flowchart illustrating an exemplary embodiment of the present invention.

[1284] Fig.1144 is a flowchart illustrating an exemplary embodiment of the present invention.

[1285] Fig.1145 is a flowchart illustrating an exemplary embodiment of the present invention.

[1286] Fig.1146 is a flowchart illustrating an exemplary embodiment of the present invention.

[1287] Fig.1147 is a flowchart illustrating an exemplary embodiment of the present invention.

[1288] Fig.1148 is a simplified illustration of data utilized in the present invention.

[1289] Fig.1149 is a flowchart illustrating an exemplary embodiment of the present invention.

[1290] Fig.1150 is a flowchart illustrating an exemplary embodiment of the present invention.

[1291] Fig.1151 is a block diagram illustrating an exemplary embodiment of the present invention.

[1292] Fig.1152 is a block diagram illustrating an exemplary embodiment of the present invention.

[1293] Fig. 1153 is a block diagram illustrating an exemplary

embodiment of the present invention.

[1294] Fig. 1154 is a block diagram illustrating an exemplary embodiment of the present invention.

[1295] Fig. 1155 is a block diagram illustrating an exemplary embodiment of the present invention.

[1296] Fig. 1156 is a block diagram illustrating an exemplary embodiment of the present invention.

[1297] Fig. 1157 is a block diagram illustrating an exemplary embodiment of the present invention.

[1298] Fig. 1158 is a block diagram illustrating an exemplary embodiment of the present invention.

[1299] Fig. 1159 is a block diagram illustrating an exemplary embodiment of the present invention.

[1300] Fig. 1160 is a block diagram illustrating an exemplary embodiment of the present invention.

[1301] Fig. 1161 is a block diagram illustrating an exemplary embodiment of the present invention.

[1302] Fig. 1162 is a block diagram illustrating an exemplary embodiment of the present invention.

[1303] Fig. 1163 is a block diagram illustrating an exemplary embodiment of the present invention.

[1304] Fig. 1164 is a block diagram illustrating an exemplary embodiment of the present invention.

[1305] Fig. 1165 is a block diagram illustrating an exemplary embodiment of the present invention.

[1306] Fig. 1166 is a block diagram illustrating an exemplary embodiment of the present invention.

[1307] Fig. 1167 is a block diagram illustrating an exemplary embodiment of the present invention.

[1308] Fig. 1168 is a block diagram illustrating an exemplary embodiment of the present invention.

[1309] Fig. 1169 is a flowchart illustrating an exemplary embodiment of the present invention.

[1310] Fig. 1170 is a flowchart illustrating an exemplary embodiment of the present invention.

[1311] Fig. 1171 is a simplified illustration of data utilized in the present invention.

[1312] Fig. 1172 is a flowchart illustrating an exemplary embodiment of the present invention.

[1313] Fig. 1173 is a flowchart illustrating an exemplary embodiment of the present invention.

[1314] Fig. 1174 is a flowchart illustrating an exemplary embodiment of the present invention.

[1315] Fig. 1175 is a flowchart illustrating an exemplary embodiment of the present invention.

[1316] Fig. 1176 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[1317] Fig. 1177 is a flowchart illustrating an exemplary embodiment of the present invention.

[1318] Fig. 1178 is a flowchart illustrating an exemplary embodiment of the present invention.

[1319] Fig. 1179 is a simplified illustration of data utilized in the present invention.

[1320] Fig. 1180 is a flowchart illustrating an exemplary embodiment of the present invention.

[1321] Fig. 1181 is a flowchart illustrating an exemplary embodiment of the present invention.

[1322] Fig. 1182 is a flowchart illustrating an exemplary embodiment of the present invention.

[1323] Fig. 1183 is a flowchart illustrating an exemplary embodiment of the present invention.

[1324] Fig. 1184 is a simplified illustration of data utilized in the present invention.

[1325] Fig. 1185 is a flowchart illustrating an exemplary embodiment of the present invention.

[1326] Fig. 1186 is a flowchart illustrating an exemplary embodiment of the present invention.

[1327] Fig. 1187 is a flowchart illustrating an exemplary embodiment of the present invention.

[1328] Fig. 1188 is a flowchart illustrating an exemplary embodiment of the present invention.

[1329] Fig. 1189 is a block diagram illustrating an exemplary embodiment of the present invention.

[1330] Fig. 1190 is a block diagram illustrating an exemplary embodiment of the present invention.

[1331] Fig. 1191 is a block diagram illustrating an exemplary embodiment of the present invention.

[1332] Fig. 1192 is a block diagram illustrating an exemplary embodiment of the present invention.

[1333] Fig. 1193 is a block diagram illustrating an exemplary embodiment of the present invention.

[1334] Fig. 1194 is a block diagram illustrating an exemplary embodiment of the present invention.

[1335] Fig. 1195 is a block diagram illustrating an exemplary embodiment of the present invention.

[1336] Fig. 1196 is a block diagram illustrating an exemplary embodiment of the present invention.

[1337] Fig. 1197 is a block diagram illustrating an exemplary embodiment of the present invention.

[1338] Fig. 1198 is a block diagram illustrating an exemplary embodiment of the present invention.

[1339] Fig. 1199 is a block diagram illustrating an exemplary

embodiment of the present invention.

[1340] Fig. 1200 is a block diagram illustrating an exemplary embodiment of the present invention.

[1341] Fig. 1201 is a block diagram illustrating an exemplary embodiment of the present invention.

[1342] Fig. 1202 is a block diagram illustrating an exemplary embodiment of the present invention.

[1343] Fig. 1203 is a block diagram illustrating an exemplary embodiment of the present invention.

[1344] Fig. 1204 is a block diagram illustrating an exemplary embodiment of the present invention.

[1345] Fig. 1205 is a block diagram illustrating an exemplary embodiment of the present invention.

[1346] Fig. 1206 is a block diagram illustrating an exemplary embodiment of the present invention.

[1347] Fig. 1207 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1348] Fig. 1208 is a block diagram illustrating an exemplary embodiment of the present invention.

[1349] Fig. 1209 is a block diagram illustrating an exemplary embodiment of the present invention.

[1350] Fig. 1210 is a block diagram illustrating an exemplary embodiment of the present invention.

[1351] Fig. 1211 is a block diagram illustrating an exemplary embodiment of the present invention.

[1352] Fig. 1212 is a block diagram illustrating an exemplary embodiment of the present invention.

[1353] Fig. 1213 is a flowchart illustrating an exemplary embodiment of the present invention.

[1354] Fig. 1214 is a flowchart illustrating an exemplary embodiment of the present invention.

[1355] Fig. 1215 is a flowchart illustrating an exemplary embodiment of the present invention.

[1356] Fig. 1216 is a flowchart illustrating an exemplary embodiment of the present invention.

[1357] Fig. 1217 is a flowchart illustrating an exemplary embodiment of the present invention.

[1358] Fig. 1218 is a flowchart illustrating an exemplary embodiment of the present invention.

[1359] Fig. 1219 is a flowchart illustrating an exemplary embodiment of the present invention.

[1360] Figs. 1220a and 1220b are flowcharts illustrating an exemplary embodiment of the present invention.

[1361] Fig. 1221 is a flowchart illustrating an exemplary embodiment of the present invention.

[1362] Fig. 1221a is a flowchart illustrating an exemplary em-

bodiment of the present invention.

[1363] Fig. 1221b is a flowchart illustrating an exemplary embodiment of the present invention.

[1364] Fig. 1222 is a block diagram illustrating an exemplary embodiment of the present invention.

[1365] Fig. 1223 is a block diagram illustrating an exemplary embodiment of the present invention.

[1366] Fig. 1224a is a flowchart illustrating an exemplary embodiment of the present invention.

[1367] Fig. 1224b is a flowchart illustrating an exemplary embodiment of the present invention.

[1368] Fig. 1225 is a flowchart illustrating an exemplary embodiment of the present invention.

[1369] Fig. 1225a is a flowchart illustrating an exemplary embodiment of the present invention.

[1370] Fig. 1225b is a flowchart illustrating an exemplary embodiment of the present invention.

[1371] Fig. 1226 is a flowchart illustrating an exemplary embodiment of the present invention.

[1372] Fig. 1227 is a flowchart illustrating an exemplary embodiment of the present invention.

[1373] Fig. 1228 is a flowchart illustrating an exemplary embodiment of the present invention.

[1374] Figs. 1229a and 1229b are flowcharts illustrating an exemplary embodiment of the present invention.

[1375] Fig. 1230 is a flowchart illustrating an exemplary embodiment of the present invention.

[1376] Fig. 1231 is a flowchart illustrating an exemplary embodiment of the present invention.

[1377] Fig. 1232 is a flowchart illustrating an exemplary embodiment of the present invention.

[1378] Fig. 1233 is a flowchart illustrating an exemplary embodiment of the present invention.

[1379] Fig. 1234a is a flowchart illustrating an exemplary embodiment of the present invention.

[1380] Fig. 1234b is a flowchart illustrating an exemplary embodiment of the present invention.

[1381] Fig. 1235 is a block diagram illustrating an exemplary embodiment of the present invention.

[1382] Fig. 1236 is a block diagram illustrating an exemplary embodiment of the present invention.

[1383] Fig. 1237 is a block diagram illustrating an exemplary embodiment of the present invention.

[1384] Fig. 1238 is a block diagram illustrating an exemplary embodiment of the present invention.

[1385] Fig. 1239 is a block diagram illustrating an exemplary

embodiment of the present invention.

[1386] Fig. 1240a is a flowchart illustrating an exemplary embodiment of the present invention.

[1387] Fig. 1240b is a flowchart illustrating an exemplary embodiment of the present invention.

[1388] Fig. 1241a is a flowchart illustrating an exemplary embodiment of the present invention.

[1389] Fig. 1241b is a flowchart illustrating an exemplary embodiment of the present invention.

[1390] Fig. 1242 is a block diagram illustrating an exemplary embodiment of the present invention.

[1391] Fig. 1243 is a block diagram illustrating an exemplary embodiment of the present invention.

[1392] Fig. 1244 is a block diagram illustrating an exemplary embodiment of the present invention.

[1393] Fig. 1245 is a flowchart illustrating an exemplary embodiment of the present invention.

[1394] Fig. 1246 is a flowchart illustrating an exemplary embodiment of the present invention.

[1395] Fig. 1247 is a flowchart illustrating an exemplary embodiment of the present invention.

[1396] Fig. 1248 is a flowchart illustrating an exemplary embodiment of the present invention.

[1397] Fig. 1249 is a flowchart illustrating an exemplary embodiment of the present invention.

[1398] Fig. 1250 is a flowchart illustrating an exemplary embodiment of the present invention.

[1399] Fig. 1251 is a flowchart illustrating an exemplary embodiment of the present invention.

[1400] Fig. 1252 is a flowchart illustrating an exemplary embodiment of the present invention.

[1401] Fig. 1253a is a flowchart illustrating an exemplary embodiment of the present invention.

[1402] Fig. 1253b is a flowchart illustrating an exemplary embodiment of the present invention.

[1403] Fig. 1254 is a flowchart illustrating an exemplary embodiment of the present invention.

[1404] Fig. 1255 is a block diagram illustrating an exemplary embodiment of the present invention.

[1405] Fig. 1256 is a block diagram illustrating an exemplary embodiment of the present invention.

[1406] Fig. 1257 is a block diagram illustrating an exemplary embodiment of the present invention.

[1407] Fig. 1258 is a block diagram illustrating an exemplary embodiment of the present invention.

[1408] Fig. 1259 is a block diagram illustrating an exemplary

embodiment of the present invention.

[1409] Fig. 1260 is a block diagram illustrating an exemplary embodiment of the present invention.

[1410] Fig. 1261 is a block diagram illustrating an exemplary embodiment of the present invention.

[1411] Fig. 1262 is a block diagram illustrating an exemplary embodiment of the present invention.

[1412] Fig. 1263 is a block diagram illustrating an exemplary embodiment of the present invention.

[1413] Fig. 1264 is a block diagram illustrating an exemplary embodiment of the present invention.

[1414] Fig. 1265 is a block diagram illustrating an exemplary embodiment of the present invention.

[1415] Fig. 1266 is a block diagram illustrating an exemplary embodiment of the present invention.

[1416] Fig. 1267 is a block diagram illustrating an exemplary embodiment of the present invention.

[1417] Fig. 1268 is a block diagram illustrating an exemplary embodiment of the present invention.

[1418] Fig. 1269 is a block diagram illustrating an exemplary embodiment of the present invention.

[1419] Fig. 1270 is a block diagram illustrating an exemplary embodiment of the present invention.

[1420] Fig. 1271 is a flowchart illustrating an exemplary embodiment of the present invention.

[1421] Fig. 1272 is a flowchart illustrating an exemplary embodiment of the present invention.

[1422] Fig. 1273 is a flowchart illustrating an exemplary embodiment of the present invention.

[1423] Fig. 1274 is a flowchart illustrating an exemplary embodiment of the present invention.

[1424] Fig. 1275 is a flowchart illustrating an exemplary embodiment of the present invention.

[1425] Fig. 1276 is a flowchart illustrating an exemplary embodiment of the present invention.

[1426] Fig. 1277 is a flowchart illustrating an exemplary embodiment of the present invention.

[1427] Fig. 1278 is a flowchart illustrating an exemplary embodiment of the present invention.

[1428] Fig. 1279 is a block diagram illustrating an exemplary embodiment of the present invention.

[1429] Fig. 1280 is a block diagram illustrating an exemplary embodiment of the present invention.

[1430] Fig. 1281 is a flowchart illustrating an exemplary embodiment of the present invention.

[1431] Fig. 1282 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[1432] Fig. 1283 is a flowchart illustrating an exemplary embodiment of the present invention.

[1433] Fig. 1284 is a flowchart illustrating an exemplary embodiment of the present invention.

[1434] Fig. 1285 is a flowchart illustrating an exemplary embodiment of the present invention.

[1435] Fig. 1286 is a flowchart illustrating an exemplary embodiment of the present invention.

[1436] Fig. 1287 is a flowchart illustrating an exemplary embodiment of the present invention.

[1437] Fig. 1288 is a flowchart illustrating an exemplary embodiment of the present invention.

[1438] Fig. 1289 is a block diagram illustrating an exemplary embodiment of the present invention.

[1439] Fig. 1290 is a block diagram illustrating an exemplary embodiment of the present invention.

[1440] Fig. 1291 is a block diagram illustrating an exemplary embodiment of the present invention.

[1441] Fig. 1292 is a block diagram illustrating an exemplary embodiment of the present invention.

[1442] Fig. 1293 is a block diagram illustrating an exemplary embodiment of the present invention.

[1443] Fig. 1294 is a block diagram illustrating an exemplary embodiment of the present invention.

[1444] Fig. 1295 is a block diagram illustrating an exemplary embodiment of the present invention.

[1445] Fig. 1296 is a block diagram illustrating an exemplary embodiment of the present invention.

[1446] Fig. 1297 is a block diagram illustrating an exemplary embodiment of the present invention.

[1447] Fig. 1298 is a block diagram illustrating an exemplary embodiment of the present invention.

[1448] Fig. 1299 is a block diagram illustrating an exemplary embodiment of the present invention.

[1449] Fig. 1300 is a flowchart illustrating an exemplary embodiment of the present invention.

[1450] Fig. 1301 is a flowchart illustrating an exemplary embodiment of the present invention.

[1451] Fig. 1302 is a flowchart illustrating an exemplary embodiment of the present invention.

[1452] Fig. 1303 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1453] Fig. 1304 is a flowchart illustrating an exemplary embodiment of the present invention.

[1454] Fig. 1305 is a simplified illustration illustrating an exem-

plary embodiment of the present invention.

[1455] Fig. 1306 is a flowchart illustrating an exemplary embodiment of the present invention.

[1456] Fig. 1307 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1457] Fig. 1308 is a flowchart illustrating an exemplary embodiment of the present invention.

[1458] Fig. 1309 is a flowchart illustrating an exemplary embodiment of the present invention.

[1459] Fig. 1310 is a flowchart illustrating an exemplary embodiment of the present invention.

[1460] Fig. 1311 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1461] Fig. 1312 is a flowchart illustrating an exemplary embodiment of the present invention.

[1462] Fig. 1313 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1463] Fig. 1314 is a flowchart illustrating an exemplary embodiment of the present invention.

[1464] Fig. 1315 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1465] Fig. 1316 is a flowchart illustrating an exemplary embodiment of the present invention.

[1466] Fig. 1317 is a flowchart illustrating an exemplary embodiment of the present invention.

[1467] Fig. 1318 is a flowchart illustrating an exemplary embodiment of the present invention.

[1468] Fig. 1319 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1469] Fig. 1320 is a flowchart illustrating an exemplary embodiment of the present invention.

[1470] Fig. 1321 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1471] Fig. 1322 is a flowchart illustrating an exemplary embodiment of the present invention.

[1472] Fig. 1323 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1473] Fig. 1324 is a flowchart illustrating an exemplary embodiment of the present invention.

[1474] Fig. 1325 is a flowchart illustrating an exemplary embodiment of the present invention.

[1475] Fig. 1326 is a flowchart illustrating an exemplary embodiment of the present invention.

[1476] Fig. 1327 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1477] Fig. 1328 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[1478] Fig. 1329 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1479] Fig. 1330 is a flowchart illustrating an exemplary embodiment of the present invention.

[1480] Fig. 1331 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1481] Fig. 1332 is a block diagram illustrating an exemplary embodiment of the present invention.

[1482] Fig. 1333 is a block diagram illustrating an exemplary embodiment of the present invention.

[1483] Fig. 1334 is a block diagram illustrating an exemplary embodiment of the present invention.

[1484] Fig. 1335 is a block diagram illustrating an exemplary embodiment of the present invention.

[1485] Fig. 1336 is a block diagram illustrating an exemplary embodiment of the present invention.

[1486] Fig. 1337 is a block diagram illustrating an exemplary embodiment of the present invention.

[1487] Fig. 1338 is a block diagram illustrating an exemplary embodiment of the present invention.

[1488] Fig. 1339 is a block diagram illustrating an exemplary embodiment of the present invention.

[1489] Fig. 1340 is a block diagram illustrating an exemplary embodiment of the present invention.

[1490] Fig. 1341 is a block diagram illustrating an exemplary embodiment of the present invention.

[1491] Fig. 1342 is a block diagram illustrating an exemplary embodiment of the present invention.

[1492] Fig. 1343 is a block diagram illustrating an exemplary embodiment of the present invention.

[1493] Fig. 1344 is a block diagram illustrating an exemplary embodiment of the present invention.

[1494] Fig. 1345 is a block diagram illustrating an exemplary embodiment of the present invention.

[1495] Fig. 1346 is a block diagram illustrating an exemplary embodiment of the present invention.

[1496] Fig. 1347 is a block diagram illustrating an exemplary embodiment of the present invention.

[1497] Fig. 1348 is a block diagram illustrating an exemplary embodiment of the present invention.

[1498] Fig. 1349 is a block diagram illustrating an exemplary embodiment of the present invention.

[1499] Fig. 1350 is a block diagram illustrating an exemplary embodiment of the present invention.

[1500] Fig. 1351 is a block diagram illustrating an exemplary

embodiment of the present invention.

[1501] Fig. 1352 is a flowchart illustrating an exemplary embodiment of the present invention.

[1502] Fig. 1353 is a flowchart illustrating an exemplary embodiment of the present invention.

[1503] Fig. 1354 is a flowchart illustrating an exemplary embodiment of the present invention.

[1504] Fig. 1355 is a flowchart illustrating an exemplary embodiment of the present invention.

[1505] Fig. 1356 is a flowchart illustrating an exemplary embodiment of the present invention.

[1506] Fig. 1357 is a flowchart illustrating an exemplary embodiment of the present invention.

[1507] Fig. 1358 is a flowchart illustrating an exemplary embodiment of the present invention.

[1508] Fig. 1359 is a flowchart illustrating an exemplary embodiment of the present invention.

[1509] Fig. 1360 is a flowchart illustrating an exemplary embodiment of the present invention.

[1510] Fig. 1361 is a flowchart illustrating an exemplary embodiment of the present invention.

[1511] Fig. 1362 is a flowchart illustrating an exemplary embodiment of the present invention.

[1512] Fig. 1363 is a flowchart illustrating an exemplary embodiment of the present invention.

[1513] Fig. 1364 is a flowchart illustrating an exemplary embodiment of the present invention.

[1514] Fig. 1365 is a flowchart illustrating an exemplary embodiment of the present invention.

[1515] Fig. 1366 is a flowchart illustrating an exemplary embodiment of the present invention.

[1516] Fig. 1367 is a flowchart illustrating an exemplary embodiment of the present invention.

[1517] Fig. 1368 is a flowchart illustrating an exemplary embodiment of the present invention.

[1518] Fig. 1369 is a flowchart illustrating an exemplary embodiment of the present invention.

[1519] Fig. 1370 is a flowchart illustrating an exemplary embodiment of the present invention.

[1520] Fig. 1371 is a flowchart illustrating an exemplary embodiment of the present invention.

[1521] Fig. 1372 is a flowchart illustrating an exemplary embodiment of the present invention.

[1522] Fig. 1373 is a flowchart illustrating an exemplary embodiment of the present invention.

[1523] Fig. 1374 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[1524] Fig. 1375 is a flowchart illustrating an exemplary embodiment of the present invention.

[1525] Fig. 1376 is a block diagram illustrating an exemplary embodiment of the present invention.

[1526] Fig. 1377 is a block diagram illustrating an exemplary embodiment of the present invention.

[1527] Fig. 1378 is a block diagram illustrating an exemplary embodiment of the present invention.

[1528] Fig. 1379 is a block diagram illustrating an exemplary embodiment of the present invention.

[1529] Fig. 1380 is a block diagram illustrating an exemplary embodiment of the present invention.

[1530] Fig. 1381 is a block diagram illustrating an exemplary embodiment of the present invention.

[1531] Fig. 1382 is a block diagram illustrating an exemplary embodiment of the present invention.

[1532] Fig. 1383 is a block diagram illustrating an exemplary embodiment of the present invention.

[1533] Fig. 1384 is a block diagram illustrating an exemplary embodiment of the present invention.

[1534] Fig. 1385 is a block diagram illustrating an exemplary embodiment of the present invention.

[1535] Fig. 1386 is a block diagram illustrating an exemplary embodiment of the present invention.

[1536] Fig. 1387 is a block diagram illustrating an exemplary embodiment of the present invention.

[1537] Fig. 1388 is a flowchart illustrating an exemplary embodiment of the present invention.

[1538] Fig. 1389 is a flowchart illustrating an exemplary embodiment of the present invention.

[1539] Fig. 1390 is a flowchart illustrating an exemplary embodiment of the present invention.

[1540] Fig. 1391 is a flowchart illustrating an exemplary embodiment of the present invention.

[1541] Fig. 1392 is a flowchart illustrating an exemplary embodiment of the present invention.

[1542] Fig. 1393 is a flowchart illustrating an exemplary embodiment of the present invention.

[1543] Fig. 1394 is a block diagram illustrating an exemplary embodiment of the present invention.

[1544] Fig. 1395 is a block diagram illustrating an exemplary embodiment of the present invention.

[1545] Fig. 1396 is a block diagram illustrating an exemplary embodiment of the present invention.

[1546] Fig. 1397 is a block diagram illustrating an exemplary

embodiment of the present invention.

[1547] Fig. 1398 is a block diagram illustrating an exemplary embodiment of the present invention.

[1548] Fig. 1399 is a block diagram illustrating an exemplary embodiment of the present invention.

[1549] Fig. 1400 is a block diagram illustrating an exemplary embodiment of the present invention.

[1550] Fig. 1401 is a block diagram illustrating an exemplary embodiment of the present invention.

[1551] Fig. 1402 is a block diagram illustrating an exemplary embodiment of the present invention.

[1552] Fig. 1403 is a block diagram illustrating an exemplary embodiment of the present invention.

[1553] Fig. 1404 is a block diagram illustrating an exemplary embodiment of the present invention.

[1554] Fig. 1405 is a block diagram illustrating an exemplary embodiment of the present invention.

[1555] Fig. 1406 is a block diagram illustrating an exemplary embodiment of the present invention.

[1556] Fig. 1407 is a flowchart illustrating an exemplary embodiment of the present invention.

[1557] Fig. 1408 is a flowchart illustrating an exemplary embodiment of the present invention.

[1558] Fig. 1409 is a flowchart illustrating an exemplary embodiment of the present invention.

[1559] Fig. 1410 is a flowchart illustrating an exemplary embodiment of the present invention.

[1560] Fig. 1411 is a flowchart illustrating an exemplary embodiment of the present invention.

[1561] Fig. 1412 is a flowchart illustrating an exemplary embodiment of the present invention.

[1562] Fig. 1413 is a flowchart illustrating an exemplary embodiment of the present invention.

[1563] Fig. 1414 is a flowchart illustrating an exemplary embodiment of the present invention.

[1564] Fig. 1415 is a flowchart illustrating an exemplary embodiment of the present invention.

[1565] Fig. 1416 is a block diagram illustrating an exemplary embodiment of the present invention.

[1566] Fig. 1417 is a block diagram illustrating an exemplary embodiment of the present invention.

[1567] Fig. 1418 is a block diagram illustrating an exemplary embodiment of the present invention.

[1568] Fig. 1419 is a block diagram illustrating an exemplary embodiment of the present invention.

[1569] Fig. 1420 is a block diagram illustrating an exemplary

embodiment of the present invention.

[1570] Fig. 1421 is a block diagram illustrating an exemplary embodiment of the present invention.

[1571] Fig. 1421a is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1572] Fig. 1422 is a block diagram illustrating an exemplary embodiment of the present invention.

[1573] Fig. 1423 is a block diagram illustrating an exemplary embodiment of the present invention.

[1574] Fig. 1424 is a block diagram illustrating an exemplary embodiment of the present invention.

[1575] Fig. 1425 is a block diagram illustrating an exemplary embodiment of the present invention.

[1576] Fig. 1426 is a block diagram illustrating an exemplary embodiment of the present invention.

[1577] Fig. 1427 is a block diagram illustrating an exemplary embodiment of the present invention.

[1578] Fig. 1428 is a block diagram illustrating an exemplary embodiment of the present invention.

[1579] Fig. 1429 is a flowchart illustrating an exemplary embodiment of the present invention.

[1580] Fig. 1430 is a flowchart illustrating an exemplary embodiment of the present invention.

[1581] Fig. 1431 is a flowchart illustrating an exemplary embodiment of the present invention.

[1582] Fig. 1432 is a flowchart illustrating an exemplary embodiment of the present invention.

[1583] Fig. 1433 is a flowchart illustrating an exemplary embodiment of the present invention.

[1584] Fig. 1434 is a flowchart illustrating an exemplary embodiment of the present invention.

[1585] Fig. 1435 is a flowchart illustrating an exemplary embodiment of the present invention.

[1586] Fig. 1436 is a flowchart illustrating an exemplary embodiment of the present invention.

[1587] Fig. 1437 is a flowchart illustrating an exemplary embodiment of the present invention.

[1588] Fig. 1438 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1589] Fig. 1439 is a block diagram illustrating an exemplary embodiment of the present invention.

[1590] Fig. 1440 is a block diagram illustrating an exemplary embodiment of the present invention.

[1591] Fig. 1441 is a block diagram illustrating an exemplary embodiment of the present invention.

[1592] Fig. 1442 is a block diagram illustrating an exemplary

embodiment of the present invention.

[1593] Fig. 1443 is a block diagram illustrating an exemplary embodiment of the present invention.

[1594] Fig. 1444 is a block diagram illustrating an exemplary embodiment of the present invention.

[1595] Fig. 1445 is a block diagram illustrating an exemplary embodiment of the present invention.

[1596] Fig. 1446 is a block diagram illustrating an exemplary embodiment of the present invention.

[1597] Fig. 1447 is a flowchart illustrating an exemplary embodiment of the present invention.

[1598] Fig. 1448 is a flowchart illustrating an exemplary embodiment of the present invention.

[1599] Fig. 1449 is a flowchart illustrating an exemplary embodiment of the present invention.

[1600] Fig. 1450 is a block diagram illustrating an exemplary embodiment of the present invention.

[1601] Fig. 1451 is a block diagram illustrating an exemplary embodiment of the present invention.

[1602] Fig. 1452 is a block diagram illustrating an exemplary embodiment of the present invention.

[1603] Fig. 1453 is a block diagram illustrating an exemplary embodiment of the present invention.

[1604] Fig. 1454 is a block diagram illustrating an exemplary embodiment of the present invention.

[1605] Fig. 1455 is a flowchart illustrating an exemplary embodiment of the present invention.

[1606] Fig. 1456 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1607] Fig. 1457 is a block diagram illustrating an exemplary embodiment of the present invention.

[1608] Fig. 1458 is a block diagram illustrating an exemplary embodiment of the present invention.

[1609] Fig. 1459 is a block diagram illustrating an exemplary embodiment of the present invention.

[1610] Fig. 1460 is a block diagram illustrating an exemplary embodiment of the present invention.

[1611] Fig. 1461 is a block diagram illustrating an exemplary embodiment of the present invention.

[1612] Fig. 1462 is a block diagram illustrating an exemplary embodiment of the present invention.

[1613] Fig. 1463 is a block diagram illustrating an exemplary embodiment of the present invention.

[1614] Fig. 1464 is a flowchart illustrating an exemplary embodiment of the present invention.

[1615] Fig. 1465 is a block diagram illustrating an exemplary

embodiment of the present invention.

[1616] Fig. 1466 is a block diagram illustrating an exemplary embodiment of the present invention.

[1617] Fig. 1467 is a block diagram illustrating an exemplary embodiment of the present invention.

[1618] Fig. 1468 is a block diagram illustrating an exemplary embodiment of the present invention.

[1619] Fig. 1469 is a block diagram illustrating an exemplary embodiment of the present invention.

[1620] Fig. 1470 is a flowchart illustrating an exemplary embodiment of the present invention.

[1621] Fig. 1471 is a block diagram illustrating an exemplary embodiment of the present invention.

[1622] Fig. 1472 is a block diagram illustrating an exemplary embodiment of the present invention.

[1623] Fig. 1473 is a block diagram illustrating an exemplary embodiment of the present invention.

[1624] Fig. 1474 is a block diagram illustrating an exemplary embodiment of the present invention.

[1625] Fig. 1475 is a block diagram illustrating an exemplary embodiment of the present invention.

[1626] Fig. 1476 is a block diagram illustrating an exemplary embodiment of the present invention.

[1627] Fig. 1477 is a block diagram illustrating an exemplary embodiment of the present invention.

[1628] Fig. 1478 is a block diagram illustrating an exemplary embodiment of the present invention.

[1629] Fig. 1479 is a block diagram illustrating an exemplary embodiment of the present invention.

[1630] Fig. 1480 is a block diagram illustrating an exemplary embodiment of the present invention.

[1631] Fig. 1481 is a block diagram illustrating an exemplary embodiment of the present invention.

[1632] Fig. 1481a is a block diagram illustrating an exemplary embodiment of the present invention.

[1633] Fig. 1482 is a block diagram illustrating an exemplary embodiment of the present invention.

[1634] Fig. 1483 is a block diagram illustrating an exemplary embodiment of the present invention.

[1635] Fig. 1484 is a block diagram illustrating an exemplary embodiment of the present invention.

[1636] Fig. 1485 is a block diagram illustrating an exemplary embodiment of the present invention.

[1637] Fig. 1486 is a block diagram illustrating an exemplary embodiment of the present invention.

[1638] Fig. 1487 is a block diagram illustrating an exemplary

embodiment of the present invention.

[1639] Fig. 1488 is a flowchart illustrating an exemplary embodiment of the present invention.

[1640] Fig. 1489 is a flowchart illustrating an exemplary embodiment of the present invention.

[1641] Fig. 1490 is a flowchart illustrating an exemplary embodiment of the present invention.

[1642] Fig. 1491 is a flowchart illustrating an exemplary embodiment of the present invention.

[1643] Fig. 1492 is a flowchart illustrating an exemplary embodiment of the present invention.

[1644] Fig. 1493 is a flowchart illustrating an exemplary embodiment of the present invention.

[1645] Fig. 1494 is a flowchart illustrating an exemplary embodiment of the present invention.

[1646] Fig. 1495 is a flowchart illustrating an exemplary embodiment of the present invention.

[1647] Fig. 1496 is a flowchart illustrating an exemplary embodiment of the present invention.

[1648] Fig. 1497 is a flowchart illustrating an exemplary embodiment of the present invention.

[1649] Fig. 1498 is a flowchart illustrating an exemplary embodiment of the present invention.

[1650] Fig. 1499 is a block diagram illustrating an exemplary embodiment of the present invention.

[1651] Fig. 1500 is a block diagram illustrating an exemplary embodiment of the present invention.

[1652] Fig. 1501 is a block diagram illustrating an exemplary embodiment of the present invention.

[1653] Fig. 1502 is a block diagram illustrating an exemplary embodiment of the present invention.

[1654] Fig. 1503 is a block diagram illustrating an exemplary embodiment of the present invention.

[1655] Fig. 1504 is a block diagram illustrating an exemplary embodiment of the present invention.

[1656] Fig. 1505 is a block diagram illustrating an exemplary embodiment of the present invention.

[1657] Fig. 1506 is a flowchart illustrating an exemplary embodiment of the present invention.

[1658] Fig. 1507 is a flowchart illustrating an exemplary embodiment of the present invention.

[1659] Fig. 1508 is a flowchart illustrating an exemplary embodiment of the present invention.

[1660] Fig. 1509 is a flowchart illustrating an exemplary embodiment of the present invention.

[1661] Fig. 1510 is a block diagram illustrating an exemplary

embodiment of the present invention.

[1662] Fig. 1511 is a block diagram illustrating an exemplary embodiment of the present invention.

[1663] Fig. 1512 is a block diagram illustrating an exemplary embodiment of the present invention.

[1664] Fig. 1513 is a block diagram illustrating an exemplary embodiment of the present invention.

[1665] Fig. 1514 is a block diagram illustrating an exemplary embodiment of the present invention.

[1666] Fig. 1515 is a block diagram illustrating an exemplary embodiment of the present invention.

[1667] Fig. 1516 is a block diagram illustrating an exemplary embodiment of the present invention.

[1668] Fig. 1517 is a block diagram illustrating an exemplary embodiment of the present invention.

[1669] Fig. 1518 is a block diagram illustrating an exemplary embodiment of the present invention.

[1670] Fig. 1519 is a block diagram illustrating an exemplary embodiment of the present invention.

[1671] Fig. 1520 is a block diagram illustrating an exemplary embodiment of the present invention.

[1672] Fig. 1521 is a block diagram illustrating an exemplary embodiment of the present invention.

[1673] Fig. 1522 is a block diagram illustrating an exemplary embodiment of the present invention.

[1674] Fig. 1523 is a block diagram illustrating an exemplary embodiment of the present invention.

[1675] Fig. 1524 is a block diagram illustrating an exemplary embodiment of the present invention.

[1676] Fig. 1525 is a block diagram illustrating an exemplary embodiment of the present invention.

[1677] Fig. 1526 is a block diagram illustrating an exemplary embodiment of the present invention.

[1678] Fig. 1527 is a block diagram illustrating an exemplary embodiment of the present invention.

[1679] Fig. 1528 is a flowchart illustrating an exemplary embodiment of the present invention.

[1680] Fig. 1529 is a flowchart illustrating an exemplary embodiment of the present invention.

[1681] Fig. 1530 is a flowchart illustrating an exemplary embodiment of the present invention.

[1682] Fig. 1531 is a flowchart illustrating an exemplary embodiment of the present invention.

[1683] Fig. 1532 is a flowchart illustrating an exemplary embodiment of the present invention.

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ment of the present invention.

[1685] Fig. 1534 is a flowchart illustrating an exemplary embodiment of the present invention.

[1686] Fig. 1535 is a flowchart illustrating an exemplary embodiment of the present invention.

[1687] Fig. 1536 is a flowchart illustrating an exemplary embodiment of the present invention.

[1688] Fig. 1537 is a flowchart illustrating an exemplary embodiment of the present invention.

[1689] Fig. 1538 is a flowchart illustrating an exemplary embodiment of the present invention.

[1690] Fig. 1539 is a flowchart illustrating an exemplary embodiment of the present invention.

[1691] Fig. 1540 is a flowchart illustrating an exemplary embodiment of the present invention.

[1692] Fig. 1541 is a flowchart illustrating an exemplary embodiment of the present invention.

[1693] Fig. 1542 is a flowchart illustrating an exemplary embodiment of the present invention.

[1694] Fig. 1543 is a flowchart illustrating an exemplary embodiment of the present invention.

[1695] Fig. 1544 is a flowchart illustrating an exemplary embodiment of the present invention.

[1696] Fig. 1545 is a flowchart illustrating an exemplary embodiment of the present invention.

[1697] Fig. 1546 is a flowchart illustrating an exemplary embodiment of the present invention.

[1698] Fig. 1547 is a flowchart illustrating an exemplary embodiment of the present invention.

[1699] Fig. 1548 is a flowchart illustrating an exemplary embodiment of the present invention.

[1700] Fig. 1549 is a flowchart illustrating an exemplary embodiment of the present invention.

[1701] Fig. 1550 is a flowchart illustrating an exemplary embodiment of the present invention.

[1702] Fig. 1551 is a flowchart illustrating an exemplary embodiment of the present invention.

[1703] Fig. 1552 is a flowchart illustrating an exemplary embodiment of the present invention.

[1704] Fig. 1553 is a flowchart illustrating an exemplary embodiment of the present invention.

[1705] Fig. 1554 is a flowchart illustrating an exemplary embodiment of the present invention.

[1706] Fig. 1555 is a flowchart illustrating an exemplary embodiment of the present invention.

[1707] Fig. 1556 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[1708] Fig. 1557 is a flowchart illustrating an exemplary embodiment of the present invention.

[1709] Fig. 1558 is a flowchart illustrating an exemplary embodiment of the present invention.

[1710] Fig. 1559 is a flowchart illustrating an exemplary embodiment of the present invention.

[1711] Fig. 1560 is a flowchart illustrating an exemplary embodiment of the present invention.

[1712] Fig. 1561 is a flowchart illustrating an exemplary embodiment of the present invention.

[1713] Fig. 1562 is a flowchart illustrating an exemplary embodiment of the present invention.

[1714] Fig. 1563 is a flowchart illustrating an exemplary embodiment of the present invention.

[1715] Fig. 1564 is a flowchart illustrating an exemplary embodiment of the present invention.

[1716] Fig. 1565 is a flowchart illustrating an exemplary embodiment of the present invention.

[1717] Fig. 1566 is a flowchart illustrating an exemplary embodiment of the present invention.

[1718] Fig. 1567 is a flowchart illustrating an exemplary embodiment of the present invention.

[1719] Fig. 1568 is a flowchart illustrating an exemplary embodiment of the present invention.

[1720] Fig. 1569 is a flowchart illustrating an exemplary embodiment of the present invention.

[1721] Fig. 1570 is a flowchart illustrating an exemplary embodiment of the present invention.

[1722] Fig. 1571 is a flowchart illustrating an exemplary embodiment of the present invention.

[1723] Fig. 1572 is a flowchart illustrating an exemplary embodiment of the present invention.

[1724] Fig. 1573 is a flowchart illustrating an exemplary embodiment of the present invention.

[1725] Fig. 1574 is a flowchart illustrating an exemplary embodiment of the present invention.

[1726] Fig. 1575 is a flowchart illustrating an exemplary embodiment of the present invention.

[1727] Fig. 1576 is a block diagram illustrating an exemplary embodiment of the present invention.

[1728] Fig. 1577 is a block diagram illustrating an exemplary embodiment of the present invention.

[1729] Fig. 1578 is a block diagram illustrating an exemplary embodiment of the present invention.

[1730] Fig. 1579 is a block diagram illustrating an exemplary

embodiment of the present invention.

[1731] Fig. 1580 is a block diagram illustrating an exemplary embodiment of the present invention.

[1732] Fig. 1581 is a block diagram illustrating an exemplary embodiment of the present invention.

[1733] Fig. 1582 is a block diagram illustrating an exemplary embodiment of the present invention.

[1734] Fig. 1583 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1735] Fig. 1584 is a simplified illustration illustrating an exemplary embodiment of the present invention.

[1736] Fig. 1585 is a flowchart illustrating an exemplary embodiment of the present invention.

[1737] Fig. 1586 is a flowchart illustrating an exemplary embodiment of the present invention.

[1738] Fig. 1587 is a flowchart illustrating an exemplary embodiment of the present invention.

[1739] Fig. 1588 is a block diagram illustrating an exemplary embodiment of the present invention.

[1740] Fig. 1589 is a block diagram illustrating an exemplary embodiment of the present invention.

[1741] Fig. 1590 is a block diagram illustrating an exemplary embodiment of the present invention.

[1742] Fig. 1591 is a block diagram illustrating an exemplary embodiment of the present invention.

[1743] Fig. 1592 is a block diagram illustrating an exemplary embodiment of the present invention.

[1744] Fig. 1593 is a block diagram illustrating an exemplary embodiment of the present invention.

[1745] Fig. 1594 is a block diagram illustrating an exemplary embodiment of the present invention.

[1746] Fig. 1595 is a block diagram illustrating an exemplary embodiment of the present invention.

[1747] Fig. 1596 is a block diagram illustrating an exemplary embodiment of the present invention.

[1748] Fig. 1597 is a block diagram illustrating an exemplary embodiment of the present invention.

[1749] Fig. 1598 is a block diagram illustrating an exemplary embodiment of the present invention.

[1750] Fig. 1599 is a block diagram illustrating an exemplary embodiment of the present invention.

[1751] Fig. 1600 is a block diagram illustrating an exemplary embodiment of the present invention.

[1752] Fig. 1601 is a block diagram illustrating an exemplary embodiment of the present invention.

[1753] Fig. 1602 is a block diagram illustrating an exemplary

embodiment of the present invention.

[1754] Fig. 1603 is a block diagram illustrating an exemplary embodiment of the present invention.

[1755] Fig. 1604 is a block diagram illustrating an exemplary embodiment of the present invention.

[1756] Fig. 1605 is a block diagram illustrating an exemplary embodiment of the present invention.

[1757] Fig. 1606 is a block diagram illustrating an exemplary embodiment of the present invention.

[1758] Fig. 1607 is a block diagram illustrating an exemplary embodiment of the present invention.

[1759] Fig. 1608 is a block diagram illustrating an exemplary embodiment of the present invention.

[1760] Fig. 1609 is a block diagram illustrating an exemplary embodiment of the present invention.

[1761] Fig. 1610 is a block diagram illustrating an exemplary embodiment of the present invention.

[1762] Fig. 1611 is a block diagram illustrating an exemplary embodiment of the present invention.

[1763] Fig. 1612 is a flowchart illustrating an exemplary embodiment of the present invention.

[1764] Fig. 1613 is a flowchart illustrating an exemplary embodiment of the present invention.

[1765] Fig. 1614 is a flowchart illustrating an exemplary embodiment of the present invention.

[1766] Fig. 1615 is a flowchart illustrating an exemplary embodiment of the present invention.

[1767] Fig. 1616 is a flowchart illustrating an exemplary embodiment of the present invention.

[1768] Fig. 1617 is a flowchart illustrating an exemplary embodiment of the present invention.

[1769] Fig. 1618 is a flowchart illustrating an exemplary embodiment of the present invention.

[1770] Fig. 1619 is a flowchart illustrating an exemplary embodiment of the present invention.

[1771] Fig. 1620 is a flowchart illustrating an exemplary embodiment of the present invention.

[1772] Fig. 1621 is a flowchart illustrating an exemplary embodiment of the present invention.

[1773] Fig. 1622 is a flowchart illustrating an exemplary embodiment of the present invention.

[1774] Fig. 1623 is a flowchart illustrating an exemplary embodiment of the present invention.

[1775] Fig. 1624 is a flowchart illustrating an exemplary embodiment of the present invention.

[1776] Fig. 1625 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[1777] Fig. 1626 is a flowchart illustrating an exemplary embodiment of the present invention.

[1778] Fig. 1627 is a flowchart illustrating an exemplary embodiment of the present invention.

[1779] Fig. 1628 is a block diagram illustrating an exemplary embodiment of the present invention.

[1780] Fig. 1629 is a block diagram illustrating an exemplary embodiment of the present invention.

[1781] Fig. 1630 is a block diagram illustrating an exemplary embodiment of the present invention.

[1782] Fig. 1631 is a block diagram illustrating an exemplary embodiment of the present invention.

[1783] Fig. 1632 is a block diagram illustrating an exemplary embodiment of the present invention.

[1784] Fig. 1633 is a block diagram illustrating an exemplary embodiment of the present invention.

[1785] Fig. 1634 is a block diagram illustrating an exemplary embodiment of the present invention.

[1786] Fig. 1635 is a block diagram illustrating an exemplary embodiment of the present invention.

[1787] Fig. 1636a is a block diagram illustrating an exemplary embodiment of the present invention.

[1788] Fig. 1636b is a block diagram illustrating an exemplary embodiment of the present invention.

[1789] Fig. 1637 is a flowchart illustrating an exemplary embodiment of the present invention.

[1790] Fig. 1638 is a flowchart illustrating an exemplary embodiment of the present invention.

[1791] Fig. 1639 is a flowchart illustrating an exemplary embodiment of the present invention.

[1792] Fig. 1640 is a flowchart illustrating an exemplary embodiment of the present invention.

[1793] Fig. 1641 is a flowchart illustrating an exemplary embodiment of the present invention.

[1794] Fig. 1642 is a flowchart illustrating an exemplary embodiment of the present invention.

[1795] Fig. 1643 is a flowchart illustrating an exemplary embodiment of the present invention.

[1796] Fig. 1644 is a flowchart illustrating an exemplary embodiment of the present invention.

[1797] Fig. 1645 is a flowchart illustrating an exemplary embodiment of the present invention.

[1798] Fig. 1646 is a flowchart illustrating an exemplary embodiment of the present invention.

[1799] Fig. 1647 is a flowchart illustrating an exemplary embodi-

ment of the present invention.

[1800] Fig. 1648 is a flowchart illustrating an exemplary embodiment of the present invention.

[1801] Fig. 1649 is a flowchart illustrating an exemplary embodiment of the present invention.

[1802] Fig. 1650 is a flowchart illustrating an exemplary embodiment of the present invention.

[1803] Fig. 1651 is a flowchart illustrating an exemplary embodiment of the present invention.

[1804] Fig. 1652 is a flowchart illustrating an exemplary embodiment of the present invention.

[1805] ++

DETAILED DESCRIPTION

[1806] The following description is of the best presently contemplated mode of carrying out the present invention. This description is not to be taken in a limiting sense but is made merely for the purpose of describing the general principles of the invention. For example, each description of random access memory in this specification illustrates only one function or mode in order to avoid complexity in its explanation, however, such description does not mean that only one function or mode can be implemented at a

time. In other words, more than one function or mode can be implemented simultaneously by way of utilizing the same random access memory. In addition, the figure numbers are cited after the elements in parenthesis in a manner for example 'RAM 206 (Fig. 1)'. It is done so merely to assist the readers to have a better understanding of this specification, and must not be used to limit the scope of the claims in any manner since the figure numbers cited are not exclusive. The scope of the invention should be determined by referencing the appended claims.

[1807] Fig. 1 is a simplified block diagram of the Communication Device 200 utilized in the present invention. Referring to Fig. 1, Communication Device 200 includes CPU 211 which controls and administers the overall function and operation of Communication Device 200. CPU 211 uses RAM 206 to temporarily store data and/or to perform calculation to perform its function, and to implement the present invention, modes, functions, and systems explained hereinafter. Video Processor 202 generates analog and/or digital video signals which are displayed on LCD 201. ROM 207 stores the data and programs which are essential to operate Communication Device 200. Wireless

signals are received by Antenna 218 and processed by Signal Processor 208. Input signals are input by Input Device 210, such as a dial pad, a joystick, and/or a keypad, and the signals are transferred via Input Interface 209 and Data Bus 203 to CPU 211. Indicator 212 is an LED lamp which is designed to output different colors (e.g., red, blue, green, etc). Analog audio data is input to Microphone 215. A/D 213 converts the analog audio data into a digital format. Speaker 216 outputs analog audio data which is converted into an analog format from digital format by D/A 204. Sound Processor 205 produces digital audio signals that are transferred to D/A 204 and also processes the digital audio signals transferred from A/D 213. CCD Unit 214 captures video image which is stored in RAM 206 in a digital format. Vibrator 217 vibrates the entire device by the command from CPU 211.

[1808] As another embodiment, LCD 201 or LCD 201/Video Processor 202 may be separated from the other elements described in Fig. 1, and be connected in a wireless fashion to be wearable and/or head-mountable as described in the following patents: U.S. Pat. No. 6,496,161; U.S. Pat. No. 6,487,021; U.S. Pat. No. 6,462,882; U.S. Pat. No. 6,452,572; U.S. Pat. No. 6,448,944; U.S. Pat. No.

6,445,364; U.S. Pat. No. 6,445,363; U.S. Pat. No. 6,424,321; U.S. Pat. No. 6,421,183; U.S. Pat. No. 6,417,820; U.S. Pat. No. 6,388,814; U.S. Pat. No. 6,388,640; U.S. Pat. No. 6,369,952; U.S. Pat. No. 6,359,603; U.S. Pat. No. 6,359,602; U.S. Pat. No. 6,356,392; U.S. Pat. No. 6,353,503; U.S. Pat. No. 6,349,001; U.S. Pat. No. 6,329,965; U.S. Pat. No. 6,304,303; U.S. Pat. No. 6,271,808; U.S. Pat. No. 6,246,383; U.S. Pat. No. 6,239,771; U.S. Pat. No. 6,232,934; U.S. Pat. No. 6,222,675; U.S. Pat. No. 6,219,186; U.S. Pat. No. 6,204,974; U.S. Pat. No. 6,181,304; U.S. Pat. No. 6,160,666; U.S. Pat. No. 6,157,291; U.S. Pat. No. 6,147,807; U.S. Pat. No. 6,147,805; U.S. Pat. No. 6,140,980; U.S. Pat. No. 6,127,990; U.S. Pat. No. 6,124,837; U.S. Pat. No. 6,115,007; U.S. Pat. No. 6,097,543; U.S. Pat. No. 6,094,309; U.S. Pat. No. 6,094,242; U.S. Pat. No. 6,091,546; U.S. Pat. No. 6,084,556; U.S. Pat. No. 6,072,445; U.S. Pat. No. 6,055,110; U.S. Pat. No. 6,055,109; U.S. Pat. No. 6,050,717; U.S. Pat. No. 6,040,945; U.S. Pat. No. 6,034,653; U.S. Pat. No. 6,023,372; U.S. Pat. No. 6,011,653; U.S. Pat. No. 5,995,071; U.S. Pat. No. 5,991,085; U.S. Pat. No.

5,982,343; U.S. Pat. No. 5,971,538; U.S. Pat. No. 5,966,242; U.S. Pat. No. 5,959,780; U.S. Pat. No. 5,954,642; U.S. Pat. No. 5,949,583; U.S. Pat. No. 5,943,171; U.S. Pat. No. 5,923,476; U.S. Pat. No. 5,903,396; U.S. Pat. No. 5,903,395; U.S. Pat. No. 5,900,849; U.S. Pat. No. 5,880,773; U.S. Pat. No. 5,864,326; U.S. Pat. No. 5,844,656; U.S. Pat. No. 5,844,530; U.S. Pat. No. 5,838,490; U.S. Pat. No. 5,835,279; U.S. Pat. No. 5,822,127; U.S. Pat. No. 5,808,802; U.S. Pat. No. 5,808,801; U.S. Pat. No. 5,774,096; U.S. Pat. No. 5,767,820; U.S. Pat. No. 5,757,339; U.S. Pat. No. 5,751,493; U.S. Pat. No. 5,742,264; U.S. Pat. No. 5,739,955; U.S. Pat. No. 5,739,797; U.S. Pat. No. 5,708,449; U.S. Pat. No. 5,673,059; U.S. Pat. No. 5,670,970; U.S. Pat. No. 5,642,221; U.S. Pat. No. 5,619,377; U.S. Pat. No. 5,619,373; U.S. Pat. No. 5,606,458; U.S. Pat. No. 5,572,229; U.S. Pat. No. 5,546,099; U.S. Pat. No. 5,543,816; U.S. Pat. No. 5,539,422; U.S. Pat. No. 5,537,253; U.S. Pat. No. 5,526,184; U.S. Pat. No. 5,486,841; U.S. Pat. No. 5,483,307; U.S. Pat. No. 5,341,242; U.S. Pat. No. 5,281,957; and U.S. Pat. No. 5,003,300.

[1809] When Communication Device 200 is in the voice communication mode, the analog audio data input to Microphone 215 is converted to a digital format by A/D 213 and transmitted to another device via Antenna 218 in a wireless fashion after being processed by Signal Processor 208, and the wireless signal representing audio data which is received via Antenna 218 is output from Speaker 216 after being processed by Signal Processor 208 and converted to analog signal by D/A 204. For the avoidance of doubt, the definition of Communication Device 200 in this specification includes so-called 'PDA'. The definition of Communication Device 200 also includes in this specification any device which is mobile and/or portable and which is capable to send and/or receive audio data, text data, image data, video data, and/or other types of data in a wireless fashion via Antenna 218. The definition of Communication Device 200 further includes any micro device embedded or installed into devices and equipments (e.g., VCR, TV, tape recorder, heater, air conditioner, fan, clock, micro wave oven, dish washer, refrigerator, oven, washing machine, dryer, door, window, automobile, motorcycle, and modem) to remotely control these devices and equipments. The size of Communication Device 200

is irrelevant.

[1810] Fig. 2a illustrates one of the preferred methods of the communication between two Communication Device 200. In Fig. 2a, both Device A and Device B represents Communication Device 200 in Fig. 1. Device A transfers wireless data to Transmitter 301 which Relays the data to Host H via Cable 302. The data is transferred to Transmitter 308 (e.g., a satellite dish) via Cable 320 and then to Artificial Satellite 304. Artificial Satellite 304 transfers the data to Transmitter 309 which transfers the data to Host H via Cable 321. The data is then transferred to Transmitter 307 via Cable 306 and to Device B in a wireless fashion. Device B transfers wireless data to Device A in the same manner.

[1811] Fig. 2b illustrates another preferred method of the communication between two Communication Devices 200. In this example, Device A directly transfers the wireless data to Host H, an artificial satellite, which transfers the data directly to Device B. Device B transfers wireless data to Device A in the same manner.

[1812] Fig. 2c illustrates another preferred method of the communication between two Communication Devices 200. In this example, Device A transfers wireless data to Trans-

mitter 312, an artificial satellite, which Relays the data to Host H, which is also an artificial satellite, in a wireless fashion. The data is transferred to Transmitter 314, an artificial satellite, which Relays the data to Device B in a wireless fashion. Device B transfers wireless data to Device A in the same manner.

[1813] *<<Voice Recognition System>>*

[1814] Communication Device 200 (Fig. 1) has a function to operate the device by the user's voice or convert the user's voice into a text format (i.e., the voice recognition). Such function can be enabled by the technologies primarily introduced in the following inventions and the references cited thereof: U.S. Pat. No. 06282268; U.S. Pat. No. 06278772; U.S. Pat. No. 06269335; U.S. Pat. No. 06269334; U.S. Pat. No. 06260015; U.S. Pat. No. 06260014; U.S. Pat. No. 06253177; U.S. Pat. No. 06253175; U.S. Pat. No. 06249763; U.S. Pat. No. 06246990; U.S. Pat. No. 06233560; U.S. Pat. No. 06219640; U.S. Pat. No. 06219407; U.S. Pat. No. 06199043; U.S. Pat. No. 06199041; U.S. Pat. No. 06195641; U.S. Pat. No. 06192343; U.S. Pat. No. 06192337; U.S. Pat. No. 06188976; U.S. Pat. No. 06185530; U.S. Pat. No. 06185529; U.S. Pat. No.

06185527; U.S. Pat. No. 06182037; U.S. Pat. No. 06178401; U.S. Pat. No. 06175820; U.S. Pat. No. 06163767; U.S. Pat. No. 06157910; U.S. Pat. No. 06119086; U.S. Pat. No. 06119085; U.S. Pat. No. 06101472; U.S. Pat. No. 06100882; U.S. Pat. No. 06092039; U.S. Pat. No. 06088669; U.S. Pat. No. 06078807; U.S. Pat. No. 06075534; U.S. Pat. No. 06073101; U.S. Pat. No. 06073096; U.S. Pat. No. 06073091; U.S. Pat. No. 06067517; U.S. Pat. No. 06067514; U.S. Pat. No. 06061646; U.S. Pat. No. 06044344; U.S. Pat. No. 06041300; U.S. Pat. No. 06035271; U.S. Pat. No. 06006183; U.S. Pat. No. 05995934; U.S. Pat. No. 05974383; U.S. Pat. No. 05970239; U.S. Pat. No. 05963905; U.S. Pat. No. 05956671; U.S. Pat. No. 05953701; U.S. Pat. No. 05953700; U.S. Pat. No. 05937385; U.S. Pat. No. 05937383; U.S. Pat. No. 05933475; U.S. Pat. No. 05930749; U.S. Pat. No. 05909667; U.S. Pat. No. 05899973; U.S. Pat. No. 05895447; U.S. Pat. No. 05884263; U.S. Pat. No. 05878117; U.S. Pat. No. 05864819; U.S. Pat. No. 05848163; U.S. Pat. No. 05819225; U.S. Pat. No. 05805832; U.S. Pat. No. 05802251; U.S. Pat. No. 05799278; U.S. Pat. No.

05797122; U.S. Pat. No. 05787394; U.S. Pat. No. 05768603; U.S. Pat. No. 05751905; U.S. Pat. No. 05729656; U.S. Pat. No. 05704009; U.S. Pat. No. 05671328; U.S. Pat. No. 05649060; U.S. Pat. No. 05615299; U.S. Pat. No. 05615296; U.S. Pat. No. 05544277; U.S. Pat. No. 05524169; U.S. Pat. No. 05522011; U.S. Pat. No. 05513298; U.S. Pat. No. 05502791; U.S. Pat. No. 05497447; U.S. Pat. No. 05477451; U.S. Pat. No. 05475792; U.S. Pat. No. 05465317; U.S. Pat. No. 05455889; U.S. Pat. No. 05440663; U.S. Pat. No. 05425129; U.S. Pat. No. 05353377; U.S. Pat. No. 05333236; U.S. Pat. No. 05313531; U.S. Pat. No. 05293584; U.S. Pat. No. 05293451; U.S. Pat. No. 05280562; U.S. Pat. No. 05278942; U.S. Pat. No. 05276766; U.S. Pat. No. 05267345; U.S. Pat. No. 05233681; U.S. Pat. No. 05222146; U.S. Pat. No. 05195167; U.S. Pat. No. 05182773; U.S. Pat. No. 05165007; U.S. Pat. No. 05129001; U.S. Pat. No. 05072452; U.S. Pat. No. 05067166; U.S. Pat. No. 05054074; U.S. Pat. No. 05050215; U.S. Pat. No. 05046099; U.S. Pat. No. 05033087; U.S. Pat. No. 05031217; U.S. Pat. No. 05018201; U.S. Pat. No. 04980918; U.S. Pat. No.

04977599; U.S. Pat. No. 04926488; U.S. Pat. No. 04914704; U.S. Pat. No. 04882759; U.S. Pat. No. 04876720; U.S. Pat. No. 04852173; U.S. Pat. No. 04833712; U.S. Pat. No. 04829577; U.S. Pat. No. 04827521; U.S. Pat. No. 04759068; U.S. Pat. No. 04748670; U.S. Pat. No. 04741036; U.S. Pat. No. 04718094; U.S. Pat. No. 04618984; U.S. Pat. No. 04348553; U.S. Pat. No. 06289140; U.S. Pat. No. 06275803; U.S. Pat. No. 06275801; U.S. Pat. No. 06272146; U.S. Pat. No. 06266637; U.S. Pat. No. 06266571; U.S. Pat. No. 06223153; U.S. Pat. No. 06219638; U.S. Pat. No. 06163535; U.S. Pat. No. 06115820; U.S. Pat. No. 06107935; U.S. Pat. No. 06092034; U.S. Pat. No. 06088361; U.S. Pat. No. 06073103; U.S. Pat. No. 06073095; U.S. Pat. No. 06067084; U.S. Pat. No. 06064961; U.S. Pat. No. 06055306; U.S. Pat. No. 06047301; U.S. Pat. No. 06023678; U.S. Pat. No. 06023673; U.S. Pat. No. 06009392; U.S. Pat. No. 05995933; U.S. Pat. No. 05995931; U.S. Pat. No. 05995590; U.S. Pat. No. 05991723; U.S. Pat. No. 05987405; U.S. Pat. No. 05974382; U.S. Pat. No. 05943649; U.S. Pat. No. 05916302; U.S. Pat. No. 05897616; U.S. Pat. No.

05897614; U.S. Pat. No. 05893133; U.S. Pat. No. 05873064; U.S. Pat. No. 05870616; U.S. Pat. No. 05864805; U.S. Pat. No. 05857099; U.S. Pat. No. 05809471; U.S. Pat. No. 05805907; U.S. Pat. No. 05799273; U.S. Pat. No. 05764852; U.S. Pat. No. 05715469; U.S. Pat. No. 05682501; U.S. Pat. No. 05680509; U.S. Pat. No. 05668854; U.S. Pat. No. 05664097; U.S. Pat. No. 05649070; U.S. Pat. No. 05640487; U.S. Pat. No. 05621809; U.S. Pat. No. 05577249; U.S. Pat. No. 05502774; U.S. Pat. No. 05471521; U.S. Pat. No. 05467425; U.S. Pat. No. 05444617; U.S. Pat. No. 04991217; U.S. Pat. No. 04817158; U.S. Pat. No. 04725885; U.S. Pat. No. 04528659; U.S. Pat. No. 03995254; U.S. Pat. No. 03969700; U.S. Pat. No. 03925761; U.S. Pat. No. 03770892. The voice recognition function can be performed in terms of software by using Area 261, the voice recognition working area, of RAM 206 (Fig. 1) which is specifically allocated to perform such function as described in Fig. 3, or can also be performed in terms of hardware circuit where such space is specifically allocated in Area 282 of Sound Processor 205 (Fig. 1) for the voice recognition system as described in Fig. 4.

[1815] Fig. 5 illustrates how the voice recognition function is activated. CPU 211 (Fig. 1) periodically checks the input status of Input Device 210 (Fig. 1) (S1). If the CPU 211 detects a specific signal input from Input Device 210 (S2) the voice recognition system which is described in Fig. 2 and/or Fig. 3 is activated. As another embodiment, the voice recognition system can also be activated by entering predetermined phrase, such as 'start voice recognition system' via Microphone 215 (Fig. 1).

[1816] *<<Voice Recognition--Dialing / Auto-off During Call Function>>*

[1817] Fig. 6a and Fig. 6b illustrate the operation of the voice recognition in the present invention. Once the voice recognition system is activated (S1) the analog audio data is input from Microphone 215 (Fig. 1) (S2). The analog audio data is converted into digital data by A/D 213 (Fig. 1) (S3). The digital audio data is processed by Sound Processor 205 (Fig. 1) to retrieve the text and numeric information therefrom (S4). Then the numeric information is retrieved (S5) and displayed on LCD 201 (Fig. 1) (S6). If the retrieved numeric information is not correct (S7), the user can input the correct numeric information manually by using Input Device 210 (Fig. 1) (S8). Once the sequence of inputting the numeric information is completed and after

the confirmation process is over (S9), the entire numeric information is displayed on LCD 201 and the sound is output from Speaker 216 under control of CPU 211 (S10). If the numeric information is correct (S11), Communication Device 200 (Fig. 1) initiates the dialing process by utilizing the numeric information (S12). The dialing process continues until Communication Device 200 is connected to another device (S13). Once CPU 211 detects that the line is connected it automatically deactivates the voice recognition system (S14).

[1818] As described in Fig. 7, CPU 211 (Fig. 1) checks the status of Communication Device 200 periodically (S1) and remains the voice recognition system offline during call (S2). If the connection is severed, i.e., user hangs up, then CPU 211 reactivates the voice recognition system (S3).

[1819] *<<Voice Recognition Tag Function>>*

[1820] Figs. 8 through 12 describes the method of inputting the numeric information in a convenient manner.

[1821] As described in Fig. 8,RAM 206 includes Table #1 (Fig. 8) and Table #2 (Fig. 9). In Fig. 8, audio information #1 corresponds to tag 'Scott.' Namely audio information, such as wave data, which represents the sound of 'Scott' (sounds like 'S-ko-t') is registered in Table #1, which corresponds

to tag 'Scott'. In the same manner audio information #2 corresponds to tag 'Carol'; audio information #3 corresponds to tag 'Peter'; audio information #4 corresponds to tag 'Amy'; and audio information #5 corresponds to tag 'Brian.' In Fig. 9, tag 'Scott' corresponds to numeric information '(916) 411-2526'; tag 'Carol' corresponds to numeric information '(418) 675-6566'; tag 'Peter' corresponds to numeric information '(220) 890-1567'; tag 'Amy' corresponds to numeric information '(615) 125-3411'; and tag 'Brian' corresponds to numeric information '(042) 645-2097.' Fig. 11 illustrates how CPU 211 (Fig. 1) operates by utilizing both Table #1 and Table #2. Once the audio data is processed as described in S4 of Fig. 6, CPU 211 scans Table #1 (S1). If the retrieved audio data matches with one of the audio information registered in Table #1 (S2), CPU 211 scans Table #2 (S3) and retrieves the corresponding numeric information from Table #2 (S4).

[1822] Fig. 10 illustrates another embodiment of the present invention. Here, RAM 206 includes Table #A instead of Table #1 and Table #2 described above. In this embodiment, audio info #1 (i.e., wave data which represents the sound of 'Scot') directly corresponds to numeric information

'(916) 411-2526.' In the same manner audio info #2 corresponds to numeric information '(410) 675-6566'; audio info #3 corresponds to numeric information '(220) 890-1567'; audio info #4 corresponds to numeric information '(615) 125-3411'; and audio info #5 corresponds to numeric information '(042) 645-2097.' Fig. 12 illustrates how CPU 211 (Fig. 1) operates by utilizing Table #A. Once the audio data is processed as described in S4 of Fig. 6, CPU 211 scans Table #A (S1). If the retrieved audio data matches with one of the audio information registered in Table #A (S2), it retrieves the corresponding numeric information therefrom (S3).

[1823] As another embodiment, RAM 206 may contain only Table #2 and tag can be retrieved from the voice recognition system explained in Figs. 3 through 7. Namely, once the audio data is processed by CPU 211 (Fig. 1) as described in S4 of Fig. 6 and retrieves the text data therefrom and detects one of the tags registered in Table #2 (e.g., 'Scot'), CPU 211 retrieves the corresponding numeric information (e.g., '(916) 411-2526') from the same table.

[1824] *<<Voice Recognition Noise Filtering Function>>*

[1825] Figs. 13 through15 describes the method of minimizing the undesired effect of the background noise when utiliz-

ing the voice recognition system.

[1826] As described in Fig. 13, RAM 206 (Fig. 1) includes Area 255 and Area 256. Sound audio data which represents background noise is stored in Area 255, and sound audio data which represents the beep, ringing sound and other sounds which are emitted from the Communication Device 200 are stored in Area 256.

[1827] Fig. 14 describes the method to utilize the data stored in Area 255 and Area 256 described in Fig. 13. When the voice recognition system is activated as described in Fig.5, the analog audio data is input from Microphone 215 (Fig. 1) (S1). The analog audio data is converted into digital data by A/D 213 (Fig. 1) (S2). The digital audio data is processed by Sound Processor 205 (Fig. 1) (S3) and compared to the data stored in Area 255 and Area 256 (S4). Such comparison can be done by either Sound Processor 205 or CPU 211 (Fig. 1). If the digital audio data matches to the data stored in Area 255 and/or Area 256, the filtering process is initiated and the matched portion of the digital audio data is deleted as background noise. Such sequence of process is done before retrieving text and numeric information from the digital audio data.

[1828] Fig. 14a describes the method of updating Area 255.

When the voice recognition system is activated as described in Fig.5, the analog audio data is input from Microphone 215 (Fig. 1) (S1). The analog audio data is converted into digital data by A/D 213 (Fig. 1) (S2). The digital audio data is processed by Sound Processor 205 (Fig. 1) or CPU 211 (Fig. 1) (S3) and the background noise is captured (S4). CPU 211 (Fig. 1) scans Area 255 and if the captured background noise is not registered in Area 255, it updates the sound audio data stored therein (S5).

[1829] Fig. 15 describes another embodiment of the present invention. CPU 211 (Fig. 1) routinely checks whether the voice recognition system is activated (S1). If the system is activated (S2), the beep, ringing sound, and other sounds which are emitted from Communication Device 200 are automatically turned off in order to minimize the miss recognition process of the voice recognition system (S3).

[1830] *<<Voice Recognition Auto-off Function>>*

[1831] The voice recognition system can be automatically turned off to avoid glitch as described in Fig. 16. When the voice recognition system is activated (S1), CPU 211 (Fig. 1) automatically sets a timer (S2). The value of timer (i.e., the length of time until the system is deactivated) can be set manually by the user. The timer is incremented periodi-

cally (S3), and if the incremented time equals to the predetermined value of time as set in S2 (S4), the voice recognition system is automatically deactivated (S5).

[1832] *<<Voice Recognition Email Function (1)>>*

[1833] Figs. 17a and 17b illustrate the first embodiment of the function of typing and sending e-mails by utilizing the voice recognition system. Once the voice recognition system is activated (S1), the analog audio data is input from Microphone 215 (Fig. 1) (S2). The analog audio data is converted into digital data by A/D 213 (Fig. 1) (S3). The digital audio data is processed by Sound Processor 205 (Fig. 1) or CPU 211 (Fig. 1) to retrieve the text and numeric information therefrom (S4). The text and numeric information are retrieved (S5) and are displayed on LCD 201 (Fig. 1) (S6). If the retrieved information is not correct (S7), the user can input the correct text and/or numeric information manually by using the Input Device 210 (Fig. 1) (S8). If inputting the text and numeric information is completed (S9) and CPU 211 detects input signal from Input Device 210 to send the e-mail (S10), the dialing process is initiated (S11). The dialing process is repeated until Communication Device 200 is connected to Host H (S12), and the e-mail is sent to the designated address

(S13).

[1834] *<<Voice Recognition -- Speech-to-text Function>>*

[1835] Fig. 18 illustrates the speech-to-text function of Communication Device 200 (Fig. 1).

[1836] Once Communication Device 200 receives a transmitted data from another device via Antenna 218 (Fig. 1) (S1), Signal Processor 208 (Fig. 1) processes the data (e.g., wireless signal error check and decompression) (S2), and the transmitted data is converted into digital audio data (S3). Such conversion can be rendered by either CPU 211 (Fig. 1) or Signal Processor 208. The digital audio data is transferred to Sound Processor 205 (Fig. 1) via Data Bus 203 and text and numeric information are retrieved therefrom (S4). CPU 211 designates the predetermined font and color to the text and numeric information (S5) and also designates a tag to such information (S6). After these tasks are completed the tag and the text and numeric information are stored in RAM 206 and displayed on LCD 201 (S7).

[1837] Fig. 19 illustrates how the text and numeric information as well as the tag are displayed. On LCD 201 the text and numeric information 702 ('XXXXXXXXX') are displayed with the predetermined font and color as well as with the tag

701 ('John').

[1838] *<<Voice Recognition -- Summary>>*

[1839] The foregoing inventions may be summarized as the following.

[1840] (1) A communication device which has a function to retrieve text and numeric information from a user's voice input from a microphone wherein said function is deactivated when said communication device is connected to another device in order to avoid undesired operation of said communication device.

[1841] (2) A communication device which has a function to retrieve text and numeric information from a user's voice input from a microphone wherein said communication device retrieves a numeric information from said user's voice and initiates a dialing process by utilizing said numeric information thereby enabling said user to initiate said dialing process only by his/her voice and/or by without physically contacting said communication device.

[1842] (3) A communication device which has a function to retrieve text and numeric information from a user's voice input from a microphone wherein said communication device retrieves audio information from which numeric information can not be retrieved from said user's voice and

retrieves predetermined corresponding numeric information therefrom thereby enabling said user to initiate a dialing process in a convenient manner and without memorizing said numeric information or without referring to other sources for said information.

[1843] (4) A communication device which has a function to retrieve text and numeric information from a user's voice input from a microphone wherein said communication device compares audio information retrieved from said user's voice with pre-stored audio data and erases said audio data from said audio information before retrieving text and numeric information therefrom thereby enabling said function to be more accurate and minimizing error in retrieving said text and numeric information.

[1844] (5) A communication device which has a function to retrieve text and numeric information from a user's voice input from a microphone wherein said communication device retrieves text and numeric information from data transmitted from another device and displays said text and numeric information with predetermined font and color thereby enabling the user to visually confirm the content of conversation by way of observing the said text and numeric information displayed.

[1845] (6) A wireless communication device comprising a microphone, a display, an input device, an antenna, an alphanumeric data modification means and, a voice recognition system, wherein when said voice recognition system is activated and said wireless communication is in an email producing mode to produce an email, a series of audio data is input from said microphone and said voice recognition system converts said series of audio data into a first series of alphanumeric data which are displayed on said display, said first series of alphanumeric data are modified by said alphanumeric data modification means to a second series of alphanumeric data when said second series of alphanumeric data are input from said input device, said email including said second series of alphanumeric data is transmitted in a wireless manner from said antenna.

[1846] *<<Positioning System>>*

[1847] Fig. 20a illustrates the simplified block diagram to detect the position of Communication Device 200 (Fig. 1).

[1848] In Fig. 20a, Relay R1 is connected to Cable C1, Relay R2 is connected to Cable C2, Relay R3 is connected to Cable C3, and Relay R4 is connected to Cable C4. Cables C1, C2, C3, and C4 are connected to Transmitter T, which is con-

nected to Host H by Cable C5. The Relays (R 1 through R 20) are located throughout the predetermined area in the pattern illustrated in Fig. 20b. The system illustrated in Fig. 20a and Fig. 20b is designed to pinpoint the position of Communication Device 200 by using the method so-called 'global positioning system' or 'GPS.' Such function can be enabled by the technologies primarily introduced in the following inventions and the references cited thereof: U.S. Pat. No. 6,429,814; U.S. Pat. No. 6,427,121; U.S. Pat. No. 6,427,120; U.S. Pat. No. 6,424,826; U.S. Pat. No. 6,415,227; U.S. Pat. No. 6,415,154; U.S. Pat. No. 6,411,811; U.S. Pat. No. 6,392,591; U.S. Pat. No. 6,389,291; U.S. Pat. No. 6,369,751; U.S. Pat. No. 6,347,113; U.S. Pat. No. 6,324,473; U.S. Pat. No. 6,301,545; U.S. Pat. No. 6,297,770; U.S. Pat. No. 6,278,404; U.S. Pat. No. 6,275,771; U.S. Pat. No. 6,272,349; U.S. Pat. No. 6,266,012; U.S. Pat. No. 6,259,401; U.S. Pat. No. 6,243,647; U.S. Pat. No. 6,236,354; U.S. Pat. No. 6,233,094; U.S. Pat. No. 6,232,922; U.S. Pat. No. 6,211,822; U.S. Pat. No. 6,188,351; U.S. Pat. No. 6,182,927; U.S. Pat. No. 6,163,567; U.S. Pat. No. 6,101,430; U.S. Pat. No. 6,084,542; U.S. Pat. No. 5,971,552; U.S. Pat. No.

5,963,167; U.S. Pat. No. 5,944,770; U.S. Pat. No. 5,890,091; U.S. Pat. No. 5,841,399; U.S. Pat. No. 5,808,582; U.S. Pat. No. 5,777,578; U.S. Pat. No. 5,774,831; U.S. Pat. No. 5,764,184; U.S. Pat. No. 5,757,786; U.S. Pat. No. 5,736,961; U.S. Pat. No. 5,736,960; U.S. Pat. No. 5,594,454; U.S. Pat. No. 5,585,800; U.S. Pat. No. 5,554,994; U.S. Pat. No. 5,535,278; U.S. Pat. No. 5,534,875; U.S. Pat. No. 5,519,620; U.S. Pat. No. 5,506,588; U.S. Pat. No. 5,446,465; U.S. Pat. No. 5,434,574; U.S. Pat. No. 5,402,441; U.S. Pat. No. 5,373,531; U.S. Pat. No. 5,349,531; U.S. Pat. No. 5,347,286; U.S. Pat. No. 5,341,301; U.S. Pat. No. 5,339,246; U.S. Pat. No. 5,293,170; U.S. Pat. No. 5,225,842; U.S. Pat. No. 5,223,843; U.S. Pat. No. 5,210,540; U.S. Pat. No. 5,193,064; U.S. Pat. No. 5,187,485; U.S. Pat. No. 5,175,557; U.S. Pat. No. 5,148,452; U.S. Pat. No. 5,134,407; U.S. Pat. No. 4,928,107; U.S. Pat. No. 4,928,106; U.S. Pat. No. 4,785,463; U.S. Pat. No. 4,754,465; U.S. Pat. No. 4,622,557; and U.S. Pat. No. 4,457,006. Relays R1 through R20 are preferably located on ground, however, are also permitted to be installed in artificial satellites as described in the foregoing patents

and the references cited thereof in order to cover wider geographical range. The Relays may also be installed in houses, buildings, bridges, boats, ships, submarines, airplanes, and spaceships. In addition, Host H may be carried by houses, buildings, bridges, boats, ships, submarines, airplanes, and spaceships. In stead of utilizing Cables C1 through C5, Relays R1 through R20 (and other relays described in this specification) may be connected to Transmitter T in a wireless fashion, and Transmitter T may be connected to Host H in a wireless fashion.

[1849] Figs. 21 through 26 illustrate how the positioning system is performed. Assuming that Device A, Communication Device 200, seeks to detect the position of Device B, another Communication Device 200, which is located somewhere in the matrix of Relays illustrated in Fig. 20b.

[1850] As described in Fig. 21, first of all the device ID of Device B is entered by utilizing Input Device 210 (Fig. 1) or the voice recognition system of Device A installed therein (S1). The device ID may be its corresponding phone number. A request data including the device ID is sent to Host H (Fig. 20a) from Device A (S2).

[1851] As illustrated in Fig. 22, Host H (Fig. 20a) periodically receives data from Device A (S1). If the received data is a re-

quest data (S2), Host H, first of all, searches its communication log which records the location of Device B when it last communicated with Host H (S3). Then Host H sends search signal from the Relays described in Fig. 20b which are located within 100-meter radius from the location registered in the communication log. If there is no response from Device B (S5), Host H sends a search signal from all Relays (from R1 to R20 in Fig. 20b) (S6).

[1852] As illustrated in Fig. 23, Device B periodically receives data from Host H (Fig. 20a) (S1). If the data received is a search signal (S2), Device B sends a response signal to Host H (S3).

[1853] As illustrated in Fig. 24 Host H (Fig. 20a) periodically receives data from Device B (S1). If the data received is a response signal (S2), Host H locates the geographic position of Device B by utilizing the method described in Figs. 20a and 20b (S3), and sends the location data and the relevant map data of the area where Device B is located to Device A (S4).

[1854] As illustrated in Fig. 25, Device A periodically receives data from Host H (Fig. 20a) (S1). If the data received is the location data and the relevant map data mentioned above (S2), Device A displays the map based on the relevant map

data and indicates the current location of Device B thereon based on the location data received (S3).

[1855] Device A can continuously track down the current location of Device B as illustrated in Fig. 26. First, Device A sends a request data to Host H (Fig. 20a) (S1). As soon as Host H receives the request data (S2), it sends a search signal in the manner illustrated in Fig. 22 (S3). As soon as Device B receives the search signal (S4), it sends a response signal to Host H (S5). Based on the response signal, Host H locates the geographic location of Device B with the method described in Figs. 20a and 20b (S6). Then Host H sends to Device A a renewed location data and a relevant map data of the area where Device B is currently located (S7). As soon as these data are received (S8), Device A displays the map based on the relevant map data and indicates the updated location based on the renewed location data (S9). If Device B is still within the specified area Device A may use the original relevant map data. As another embodiment of the present invention, S1 through S4 may be omitted and make Device B send a response signal continuously to Host H until Host H sends a command signal to Device B to cease sending the response signal.

[1856] *<<Positioning System -- Automatic Silent Mode>>*

[1857] Figs. 27a through 32g illustrate the automatic silent mode of Communication Device 200 (Fig. 1).

[1858] In Fig. 27a, Relay R1 is connected to Cable C1, Relay R2 is connected to Cable C2, Relay R3 is connected to Cable C3, and Relay R4 is connected to Cable C4. Cables C1, C2, C3, and C4 are connected to Transmitter T, which is connected to Host H by Cable C5. The Relays (R1 through R 20) are located throughout the predetermined area in the pattern illustrated in Fig. 27b. The system illustrated in Figs. 27a and 27b is designed to pinpoint the position of Communication Device 200 by using the method so-called 'global positioning system' or 'GPS.' As stated hereinbefore, such function can be enabled by the technologies primarily introduced in the inventions in the foregoing patents and the references cited thereof. The Relays R1 through R20 are preferably located on ground, however, are also permitted to be installed in artificial satellites as described in the foregoing patents and the references cited thereof in order to cover wider geographical range. In addition, Host H may be carried by an artificial satellite and utilize the formation as described in Figs. 2a, 2b, and 2c.

[1859] As illustrated in Fig. 28, the user of Communication De-

vice 200 may set the silent mode by Input Device 210 (Fig. 1) or by utilizing the voice recognition system installed therein. When Communication Device 200 is in the silent mode, (a) the ringing sound is turned off, (b) Vibrator 217 (Fig. 1) activates when Communication Device 200 receives call, and/or (c) Communication Device 200 sends an automatic response to the caller device when a call is received (S1). The user may, at his discretion, select any of these predetermined functions of the automatic silent mode.

[1860] Fig. 29 illustrates how the automatic silent mode is activated. Communication Device 200 periodically checks its present location with the method so-called 'global positioning system' or 'GPS' by using the system illustrated in Figs. 27a and 27b (S1). Communication Device 200 then compares the present location and the previous location (S2). If the difference of the two values is more than the specified amount X, i.e., when the moving velocity of Communication Device 200 exceeds the predetermined value (S3), the silent mode is activated and (a) the ringing sound is automatically turned off, (b) Vibrator 217 (Fig. 1) activates, and/or (c) Communication Device 200 sends an automatic response to the caller device according to the

user's setting (S4). Here, the silent mode is automatically activated because the user of Communication Device 200 is presumed to be on an automobile and is not in a situation to freely answer the phone, or the user is presumed to be riding a train and does not want to disturb other passengers.

[1861] As another embodiment of the present invention, the automatic silent mode may be administered by Host H (Fig. 27a). As illustrated in Fig. 30, the silent mode is set in the manner described in Fig. 28 (S1) and Communication Device 200 sends to Host H a request signal indicating that it is in the silent mode (S2).

[1862] As described in Fig. 31, when Host H (Fig. 27a) detects a call to Communication Device 200 after receiving the request signal, it checks the current location of Communication Device 200 (S1) and compares it with the previous location (S2). If the difference of the two values is more than the specified amount X, i.e., when the moving velocity of Communication Device 200 exceeds the predetermined value (S3), Host H sends a notice signal to Communication Device 200 indicating that it has received an incoming call (S4).

[1863] As illustrated in Fig. 32, Communication Device 200 re-

ceives data periodically from Host H (Fig. 27a) (S1). If the received data is a notice signal (S2), Communication Device 200 activates the silent mode (S3) and (a) the ringing sound is automatically turned off, (b) Vibrator 217 (Fig. 1) activates, and/or (c) Communication Device 200 sends an automatic response to the caller device according to the user's setting. The automatic response may be sent from Host H instead.

[1864] As another embodiment of the present invention, a train route data may be utilized. As illustrated in Fig. 32a, a train route data is stored in Area 263 of RAM 206. The train route data contains three-dimensional train route map including the location data of the train route. Fig. 32b illustrates how the train route data is utilized. CPU 211 (Fig. 1) periodically checks the present location of Communication Device 200 by the method described in Figs. 27a and 27b (S1). Then CPU 211 compares with the train route data stored in Area 263 of RAM 206 (S2). If the present location of Communication Device 200 matches the train route data (i.e., if Communication Device 200 is located on the train route) (S3), the silent mode is activated in the manner described above (S4). The silent mode is activated because the user of Communication De-

vice 200 is presumed to be currently on a train and may not want to disturb the other passengers on the same train.

[1865] As another embodiment of the present invention, such function can be delegated to Host H (Fig. 27a) as described in Fig. 32c. Namely, Host H (Fig. 27a) periodically checks the present location of Communication Device 200 by the method described in Figs. 27a and 27b (S1). Then Host H compares the present location with the train route data stored in its own storage (not shown) (S2). If the present location of communication 200 matches the train route data (i.e., if Communication Device 200 is located on the train route) (S3) Host H sends a notice signal to Communication Device 200 thereby activating the silent mode in the manner described above (S4).

[1866] Another embodiment is illustrated in Figs. 32f and 32g. As illustrated in Fig. 32f, Relays R 101, R 102, R103, R 104, R 105, R 106, which perform the same function to the Relays described in Fig. 27a and Fig. 27b, are installed in Train Tr. The signals from these Relays are sent to Host H illustrated in Fig. 27a. Relays R 101 through R 106 emit inside-the-train signals which are emitted only inside Train Tr. Fig. 32g illustrates how Communication Device

200 operates inside Train Tr. Communication Device 200 periodically checks the signal received in Train Tr (S1). If Communication Device 200 determines that the signal received is an inside-the-train signal (S2), it activates the silent mode in the manner described above (S3).

[1867] *<<Positioning System -- Auto Response Mode>>*

[1868] Fig. 32d and Fig. 32e illustrates the method to send an automatic response to a caller device when the silent mode is activated.

[1869] Assume that the caller device, a Communication Device 200, intends to call a callee device, another Communication Device 200 via Host H (Fig. 27a). As illustrated in Fig. 32d, the caller device dials the callee device and the dialing signal is sent to Host H (S1). Host H checks whether the callee device is in the silent mode (S2). If Host H detects that the callee device is in the silent mode, it sends a predetermined auto response which indicates that the callee is probably on a train and may currently not be available, which is received by the caller device (S3). If the user of the caller device still desires to request for connection and certain code is input from Input Device 210 (Fig. 1) or by the voice recognition system (S4), a request signal for connection is sent and received by Host H (S5),

and the line is connected between the caller device and the callee device via Host H (S6).

[1870] As another embodiment of the present invention, the task of Host H (Fig. 27a) which is described in Fig. 32d may be delegated to the callee device as illustrated in Fig. 32e. The caller device dials the callee device and the dialing signal is sent to the callee device via Host H (S1). The callee device checks whether it is in the silent mode (S2). If the callee device detects that it is in the silent mode, it sends an predetermined auto response which indicates that the callee is probably on a train and may currently not be available, which is sent to the caller device via Host H (S3). If the user of the caller device still desires to request for connection and certain code is input from Input Device 210 (Fig. 1) or by the voice recognition system (S4), a request signal for connection is sent to the callee device via Host H (S5), and the line is connected between the caller device and the callee device via Host H (S6).

[1871] *<<Positioning System -- Summary>>*

[1872] The foregoing inventions may be summarized as the following.

[1873] (1) A positioning system comprising a first device, a host, and a second device wherein a device ID of said second

device is input into said first device, said device ID is sent to said host, said host sends a search signal to which said second device responds, said host sends to the first device location data indicating the location of said second device, and said first device displays the location of said second device thereby enabling said first device to identify the location of said second device. Where said first device is a communication device, said first device includes an antenna, said antenna sends positioning signal to identify the location of said second device, and said antenna also sends communication signal thereby enabling the user of said first device to identify the location of said second device as well as utilizing said communication device for means of communication.

[1874] (2) A communication device wherein the moving velocity of said communication device is checked and when said moving velocity exceeds a predetermined value said communication device refrains from emitting sound thereby preventing other persons being present near said communication device from being disturbed.

[1875] (3) A communication device wherein the location of said communication device is compared to a route data and said communication device refrains from emitting sound if

said location of said communication device is determined to match said route data thereby preventing other persons being present near said communication device from being disturbed.

[1876] (4) A communication system comprising a first communication device and a second communication device wherein said first communication device receives an automatic response if said second communication device is in a certain mode and said first communication device is enable to be connected to said second communication device upon said second device sending a request thereby preventing other persons being present near said first communication device from being disturbed.

[1877] (5) A communication system comprising a communication device and a plurality of signal emitter wherein said communication device refrains from emitting sound upon receiving a certain signal from said signal emitter thereby preventing other persons being present near said communication device from being disturbed.

[1878] *<<Auto Backup System>>*

[1879] Figs. 33 through 37 illustrate the automatic backup system of Communication Device 200 (Fig. 1).

[1880] As illustrated in Fig. 33, RAM 206 (Fig. 1) includes areas

to store the data essential to the user of Communication Device 200, such as Area 278 for a phone list, Area 279 for an address book, Area 280 for email data, Area 281 for software A, Area 282 for software B, Area 283 for software C, Area 284 for Data D, Area 285 for Data E. RAM 206 also includes Area 264, i.e., the selected data info storage area, which will be explained in details hereinafter.

[1881] As described in Fig. 34, the user selects data by utilizing Input Device 210 (Fig. 1) or the voice recognition system which he/she intends to be automatically backed up (S1). The selected data are written in Area 264, the selected data info storage area (S2).

[1882] The overall operation of this function is illustrated in Figs. 35a and 35b. First of all, a timer (not shown) is set by a specific input signal produced by Input Device 210 (Fig. 1) or by the voice recognition system (S1). The timer is incremented periodically (S2) and when the incremented value equals the predetermined value (S3), CPU 211 (Fig. 1) initiates the dialing process (S4). The dialing process continues until Communication Device 200 is connected to Host H explained in Fig. 37 (S5). Once the line is connected, CPU 211 reads the information stored in Area 264

(S6) and based on such information it initiates to transfer the selected data from RAM 206 to Host H (S7). The transfer continues until all of the selected data are transferred to Host H (S8), and the line is disconnected thereafter (S9). This backup sequence can be initiated automatically and periodically by using a timer or manually. As another embodiment of the present invention, instead of selecting the data that are to be backed up, all data in RAM 206 (Fig. 1) can be transferred to Host H.

[1883] Fig. 36 illustrates the basic structure of the data transferred to Host H. Transferred data 601 includes Header 602, device ID 603, selected data 604 and Footer 605. Device ID 603 is the identification number of Communication Device 200 preferably its phone number, and selected data 604 is a pack of data which is transferred from RAM 206 to Host H based on information stored in Area 264. Header 602 and Footer 605 indicates the beginning and the end of the Transferred Data 601 respectively.

[1884] Fig. 37 illustrates the basic structure of Host H. Host H includes backup data storage Area 401 which is used to backup all of the backup data transferred from all Communication Devices 200. Host H stores the Transferred Data 601 (Fig. 36) to the designated area based on the

device ID included in Transferred Data 601. For example, Transferred Data 601 transferred from Device A is stored in Area 412 as Backup Data A. In the same manner Transferred Data 601 transferred from Device B is stored in Area 413 as Backup Data B; Transferred Data 601 transferred from Device C is stored in Area 414 as Backup Data C; Transferred Data 601 transferred from device D is stored in Area 415 as Backup Data D; Transferred Data 601 transferred from device E is stored in Area 416 as Backup Data E; and Transferred Data 601 transferred from device F is stored in Area 417 as Backup Data F.

[1885] *<<Auto Backup -- Summary>>*

[1886] The foregoing invention may be summarized as the following.

[1887] A communication system comprising a host and a plurality of communication device wherein said host includes a plurality of storage areas and each of said plurality of communication device includes a storage area, and data stored in said storage area of said communication device are manually and/or periodically transferred to one of the designated storage areas of said host thereby enabling the users of said plurality of communication device to retrieve data when said plurality of communication device

are lost or broken.

[1888] *<<Signal Amplifier>>*

[1889] Fig. 38 illustrates a signal amplifier utilized for automobiles and other transportation carriers, such as trains, airplanes, space shuttles, and motor cycles.

[1890] As described in Fig. 38, Automobile 835 includes Interface 503, an interface detachably connected to Communication Device 200, which is connected to Amplifier 502 via Cable 505. Amplifier 502 is connected to Antenna 501 via Cable 504 and Connector 507 as described in this drawing. The signal produced by Communication Device 200 is transferred to Interface 503. Then the signal is transferred to Amplifier 502 via Cable 505 where the signal is amplified. The amplified signal is transferred to Antenna 501 via Cable 504 and Connector 507, which transmits the amplified signal to Host H (not shown). The receiving signal is received by Antenna 501 and transferred to Amplifier 502 via Connector 507 and Cable 504, and then is transferred to Interface 503 via Cable 505, which transfers the amplified signal to Communication Device 200.

[1891] *<<Signal Amplifier -- Summary>>*

[1892] The foregoing invention may be summarized as the fol-

lowing.

[1893] A transportation carrier which is primarily designed to carry person or persons comprising an interface which is detachably connectable to a communication device, an amplifier which is connected to said interface and which amplifies the signal produced by said communication device, and an transmitter which is connected to said amplifier and which transmits said signal amplified by said amplifier.

[1894] *<<Audio/Video Data Capturing System>>*

[1895] Figs. 39 through 44 illustrate the audio/video capturing system of Communication Device 200 (Fig. 1).

[1896] Assuming that Device A, a Communication Device 200, captures audio/video data and transfers such data to Device B, another Communication Device 200, via a host (not shown). Primarily video data is input from CCD Unit 214 (Fig. 1) and audio data is input from Microphone 215 of (Fig. 1) of Device A.

[1897] As illustrated in Fig. 39, RAM 206 (Fig. 1) includes Area 267 which stores video data, Area 268 which stores audio data, and Area 265 which is a work area utilized for the process explained hereinafter.

[1898] As described in Fig. 40, the video data input from CCD

Unit 214 (Fig. 1) (S1a) is converted from analog data to digital data (S2a) and is processed by Video Processor 202 (Fig. 1) (S3a). Area 265 (Fig. 39) is used as work area for such process. The processed video data is stored in Area 267 (Fig. 39) of RAM 206 (S4a) and is displayed on LCD 201 (Fig. 1) (S5a). As described in the same drawing, the audio data input from Microphone 215 (Fig. 1) (S1b) is converted from analog data to digital data by A/D 213 (Fig. 1) (S2b) and is processed by Sound Processor 205 (Fig. 1) (S3b). Area 265 is used as work area for such process. The processed audio data is stored in Area 268 (Fig. 39) of RAM 206 (S4b) and is transferred to Sound Processor 205 and is output from Speaker 216 (Fig. 1) via D/A 204 (Fig. 1) (S5b). The sequences of S1a through S5a and S1b through S5b are continued until a specific signal indicating to stop such sequence is input from Input Device 210 (Fig. 1) or by the voice recognition system (S6).

[1899] Fig. 41 illustrates the sequence to transfer the video data and the audio data via Antenna 218 (Fig. 1) in a wireless fashion. As described in Fig. 41, CPU 211 (Fig. 1) of Device A initiates a dialing process (S1) until the line is connected to a host (not shown) (S2). As soon as the line is connected, CPU 211 reads the video data and the audio

data stored in Area 267 (Fig. 39) and Area 268 (Fig. 39) (S3) and transfer them to Signal Processor 208 (Fig. 1) where the data are converted into a transferring data (S4). The transferring data is transferred from Antenna 218 (Fig. 1) in a wireless fashion (S5). The sequence of S1 through S5 is continued until a specific signal indicating to stop such sequence is input from Input Device 210 (Fig. 1) or via the voice recognition system (S6). The line is disconnected thereafter (S7).

[1900] Fig. 42 illustrates the basic structure of the transferred data which is transferred from Device A as described in S4 and S5 of Fig. 41. Transferred data 610 is primarily composed of Header 611, video data 612, audio data 613, relevant data 614, and Footer 615. Video data 612 corresponds to the video data stored in Area 267 (Fig. 39) of RAM 206, and audio data 613 corresponds to the audio data stored in Area 268 (Fig. 39) of RAM 206. Relevant Data 614 includes various types of data, such as the identification numbers of Device A (i.e., transferor device) and Device B (i.e., the transferee device), a location data which represents the location of Device A, email data transferred from Device A to Device B, etc. Header 611 and Footer 615 represent the beginning and the end of Transferred

Data 610 respectively.

[1901] Fig. 43 illustrates the data contained in RAM 206 (Fig. 1) of Device B. As illustrated in Fig. 43, RAM 206 includes Area 269 which stores video data, Area 270 which stores audio data, and Area 266 which is a work area utilized for the process explained hereinafter.

[1902] As described in Fig. 44a and Fig. 44b, CPU 211 (Fig. 1) of Device B initiates a dialing process (S1) until Device B is connected to a host (not shown) (S2). Transferred Data 610 is received by Antenna 218 (Fig. 1) of Device B (S3) and is converted by Signal Processor 208 (Fig. 1) into data readable by CPU 211 (S4). Video data and audio data are retrieved from Transferred Data 610 and stored into Area 269 (Fig. 43) and Area 270 (Fig. 43) of RAM 206 respectively (S5). The video data stored in Area 269 is processed by Video Processor 202 (Fig. 1) (S6a). The processed video data is converted into an analog data (S7a) and displayed on LCD 201 (Fig. 1) (S8a). S7a may not be necessary depending on the type of LCD 201 used. The audio data stored in Area 270 is processed by Sound Processor 205 (Fig. 1) (S6b). The processed audio data is converted into analog data by D/A 204 (Fig. 1) (S7b) and output from Speaker 216 (Fig. 1) (S8b). The sequences of S6a through

S8a and S6b through S8b are continued until a specific signal indicating to stop such sequence is input from Input Device 210 (Fig. 1) or via the voice recognition system (S9).

[1903] *<<Audio/Video Data Capturing System -- Summary>>*

[1904] The foregoing invention may be summarized as the following.

[1905] (1) A communication system comprising a first communication device and a second communication device wherein said first communication consists of a video input means to input video information, a microphone, and a first antenna, said second communication device consists of a display means to output said video information, a speaker, and a second antenna, said first communication device inputs said video information and said audio information from said video input means and said microphone respectively, said video information and said audio information are sent to said second communication device from said first antenna in a wireless fashion, said second communication device receives said video information and said audio information in a wireless fashion from said second antenna, and said video information and said audio information are output from said display means and

said speaker of said second communication device respectively thereby enabling the user of said first communication device and the user of said second communication device to communicate at any location wherever they desire.

[1906] (2) A communication device comprising a video input means to input video information, a microphone, and an antenna wherein said communication device inputs said video information and said audio information from said video input means and said microphone respectively, said video information is sent to another device in a wireless fashion from said antenna, said audio information is also sent to said other device in a wireless fashion from said antenna thereby enabling the user of said communication device to communicate with said other device by utilizing said video information and said audio information in any location wherever he/she desires.

[1907] *<<Digital Mirror Function (1)>>*

[1908] Figs. 44c through 44e illustrate the first embodiment of digital mirror function of Communication Device 200 (Fig. 1).

[1909] In this embodiment, Communication Device 200 includes Rotator 291 as described in Fig. 44c. Rotator 291 is fixed

to the side of Communication Device 200 and rotates CCD Unit 214 (Fig. 1) and thereby CCD Unit 214 is enabled to face multi-direction. CPU 211 (Fig. 1) reads the video data stored in Area 267 (Fig. 39) from left to right as described in Fig. 44d when CCD Unit 214 is facing the opposite direction from LCD 201 (Fig. 1). However, when CCD Unit 214 is facing the same direction with LCD 201, CPU 211 reads the video data stored in Area 267 from right to left as described in Fig. 44e thereby producing a 'mirror image' on LCD 201. As another embodiment, more than one area in RAM 206 (Fig. 1) may be utilized instead of one area, i.e., Area 267. The following description is not explained in the drawing figures. First Area and Second Area in RAM 206 (Fig. 1) are utilized in this embodiment. First of all, CPU 211 stores the video data taken from CCD Unit 214 into both First Area and Second Area. Here, the video data stored in First Area and Second Area are identical. CPU 211 reads the video data stored in First Area from left to right as described in Fig. 44d. CPU 211 reads the video data stored in Second Area from right to left as described in Fig. 44e. CPU 211displays the video data stored in First Area on LCD 201 when CCD Unit 214 is facing the opposite direction from LCD 201. CPU 211 displays the video

data stored in Second Area on LCD 201 when CCD Unit 214 is facing the same direction with LCD 201.

[1910] As another embodiment of the present invention, more than one CCD unit which face multi-direction may be utilized instead of enabling one CCD unit to rotate in the manner described hereinbefore. The following description is not explained in the drawing figures. First CCD Unit and Second CCD Unit are utilized in this embodiment. Here, First CCD Unit faces the oppsite direction from LCD 201 (Fig. 1), and Second CCD Unit faces the same direction with LCD 201. CPU 211 (Fig. 1) reads the video data stored in Area 267 (Fig. 39) from left to right as described in Fig. 44d when First CCD Unit is activated. CPU 211 reads the video data stored in Area 267 (Fig. 39) from right to left as described in Fig. 44e when Second CCD Unit is activated thereby producing a 'mirror image' on LCD 201. Such activations may be rendered automatically by CPU 211 or manually by the user of Communication Device 200 utilizing input device 210 (Fig. 1) or via voice recognition system. As another embodiment, more than one area in RAM 206 (Fig. 1) may be utilized instead of one area, i.e., Area 267. First Area and Second Area in RAM 206 are utilized in this embodiment. Here, First Area

is designed to be read from left to right as described in Fig. 44d, and Second Area is designed to be read from right to left as described in Fig. 44e. CPU 211 stores the video data taken from First CCD Unit and Second CCD Unit into First Area and Second Area respectively. CPU 211displays the video data stored in First Area on LCD 201 when First CCD Unit is activated, and also displays the video data stored in Second Area on LCD 201 when Second CCD Unit is activated.

[1911] As another embodiment of the present invention, more than one LCD unit which face multi-direction may be utilized instead of one LCD 201 (Fig. 1). The following description is not explained in the drawing figures. First LCD and Second LCD are utilized in this embodiment. Here, First LCD faces the oppsite direction from CCD Unit 214 (Fig. 1), and Second LCD faces the same direction with CCD Unit 214. CPU 211 (Fig. 1) reads the video data stored in Area 267 (Fig. 39) from left to right as described in Fig. 44d when First LCD is activated. CPU 211 (Fig. 1) reads the video data stored in Area 267 (Fig. 39) from right to left as described in Fig. 44e when Second LCD is activated thereby producing a 'mirror image' thereon. Such activations may be rendered automatically by CPU

211 or manually by the user of Communication Device 200 utilizing input device 210 (Fig. 1) or via voice recognition system. As another embodiment, more than one area in RAM 206 (Fig. 1) may be utilized instead of one area, i.e., Area 267 (Fig. 39). First Area and Second Area in RAM 206 (Fig. 1) are utilized in this embodiment. CPU 211 stores the video data taken from CCD Unit 214 into both First Area and Second Area. Here, the video data stored in First Area and Second Area are identical. CPU 211 reads the video data stored in First Area from left to right as described in Fig. 44d, and also reads the video data stored in Second Area from right to left as described in Fig. 44e. The video data stored in First Area is displayed on First LCD, and the video data stored in Second Area is displayed on Second LCD.

[1912] *<<Digital Mirror -- Summary>>*

[1913] The foregoing inventions may be summarized as the following.

[1914] (1) A wireless communication device comprising a camera, a display, an image data producing means, a wireless transmitting means, wherein said camera is capable of facing a first direction and a second direction, said image data producing means is capable of producing a non-

inverted image data and an inverted image data, said image data producing means produces said non-inverted image data which is displayed on said display when said camera is facing said first direction and produces said inverted image data which is displayed on said display when said camera is facing said second direction, while said non-inverted image data is transferred in a wireless fashion from said wireless transmitting means.

[1915] (2) A communication device comprising a display and a video input means wherein said display outputs video image which is input from said video input means and said video image is output in a symmetric fashion when said video input means is facing the same direction with said display thereby enabling the user of said communication device to utilize said communication device as a digital mirror.

[1916] *<<Caller ID System>>*

[1917] Figs. 45 through 47 illustrate the caller ID system of Communication Device 200 (Fig. 1).

[1918] As illustrated in Fig. 45, RAM 206 includes Table C. As shown in the drawing, each phone number corresponds to a specific color and sound. For example Phone #1 corresponds to Color A and Sound E; Phone #2 corresponds to

Color B and Sound F; Phone #3 corresponds to Color C and Sound G; and Phone #4 corresponds to color D and Sound H.

[1919] As illustrated in Fig. 46, the user of Communication Device 200 selects or inputs a phone number (S1) and selects a specific color (S2) and a specific sound (S3) designated for that phone number by utilizing Input Device 210 (Fig. 1). Such sequence can be repeated until there is a specific input signal from Input Device 210 ordering to do otherwise (S4).

[1920] As illustrated in Fig. 47, CPU 211 (Fig. 1) periodically checks whether it has received a call from other communication devices (S1). If it receives a call (S2), CPU 211 scans Table C (Fig. 45) to see whether the phone number of the caller device is registered in the table (S3). If there is a match (S4), the designated color is output from Indicator 212 (Fig. 1) and the designated sound is output from Speaker 216 (Fig. 1) (S5). For example if the incoming call is from Phone #1, Color A is output from Indicator 212 and Sound E is output from Speaker 216.

[1921] *<<Caller ID -- Summary>>*

[1922] The foregoing invention may be summarized as the following.

[1923] A communication device comprising a color emitting means which outputs more than one type of color and a speaker which outputs more than one audio information wherein said communication device stores information regarding a plurality of phone numbers, a specific color and/or a specific audio information is designated to each phone number respectively, and said specific color is output from said color emitting means and/or said specific audio information is output from said speaker according to the phone number of an incoming call thereby enabling the user of said communication device to perceive the identification of the caller of said incoming call in advance of answering thereto.

[1924] *<<Stock Purchasing Function>>*

[1925] Figs. 48 through 52 illustrate the method of purchasing stocks by utilizing Communication Device 200 (Fig. 1).

[1926] Fig. 48 illustrates the data stored in ROM 207 (Fig. 1) necessary to set the notice mode. Area 251 stores the program regarding the vibration mode (i.e., vibration mode ON / vibration mode OFF); Area 252 stores the program regarding sound which is emitted from Speaker 216 (Fig. 1) and several types of sound data, such as Sound Data I, Sound Data J, and Sound Data K are stored therein; Area

253 stores the program regarding the color emitted from Indicator 212 (Fig. 1) and several types of color data, such as Color Data L, Color Data M, and Color Data N are stored therein.

[1927] As illustrated in Fig. 49, the notice mode is activated in the manner in compliance with the settings stored in setting data Area 271 of RAM 206 (Fig. 1). In the example illustrated in Fig. 49, when the notice mode is activated, Vibrator 217 (Fig. 1) is turned on in compliance with the data stored in Area 251a, Speaker 216 (Fig. 1) is turned on and Sound Data J is emitted therefrom in compliance with the data stored in Area 252a, and Indicator 212 (Fig. 1) is turned on and Color M is emitted therefrom in compliance with the data stored in Area 253a. Area 292 stores the stock purchase data, i.e., the name of the brand, the amount of limited price, the name of the stock market (such as NASDAQ and/or NYSE) and other relevant information regarding the stock purchase.

[1928] As illustrated in Fig. 50, the user of Communication Device 200 inputs the stock purchase data from Input Device 210 (Fig. 1) or by the voice recognition system, which is stored in Area 292 of RAM 206 (Fig. 49) (S1). By way of inputting specific data from Input Device 210, the property

of notice mode (i.e., vibration ON/OFF, sound ON/OFF and the type of sound, indicator ON/OFF, and the type of color) is set and the relevant data are stored in Area 271 (i.e., Areas 251a, 252a, 253a) (Fig. 49) of RAM 206 by the programs stored in Areas 251, 252, 253 of ROM 207 (Fig. 48) (S2). Communication Device 200 initiates a dialing process (S3) until it is connected to Host H (described hereinafter) (S4) and sends the stock purchase data thereto.

[1929] Fig. 51 illustrates the operation of Host H (not shown). As soon as Host H receives the stock purchase data from Communication Device 200 (S1), it initiates to monitor the stock markets which is specified in the stock purchase data (S2). If Host H detects that the price of the certain brand specified in the stock purchase data meets the limited price specified in the stock purchase data, (in the present example if the price of brand x is y) (S3), it initiates a dialing process (S4) until it is connected to Communication Device 200 (S5) and sends a notice data thereto (S6).

[1930] As illustrated in Fig. 52, Communication Device 200 periodically monitors the data received from Host H (not shown) (S1). If the data received is a notice data (S2), the

notice mode is activated in the manner in compliance with the settings stored in setting data Area 271 (Fig. 49) of RAM 206 (S3). In the example illustrated in Fig. 49, Vibrator 217 (Fig. 1) is turned on, Sound Data J is emitted from Speaker 216 (Fig. 1), and Indicator 212 (Fig. 1) emits Color M.

[1931] *<<Stock Purchase -- Summary>>*

[1932] The foregoing invention may be summarized as the following.

[1933] A communication system comprising a first computer and a second computer wherein said second computer is a wireless communication device including an antenna, a stock purchase data is input to said second computer, said first computer monitors one or more stock markets specified in said stock purchase data and sends a notice to said second computer, and said second computer responds in a specified manner upon receiving said notice from said antenna in a wireless fashion thereby enabling the user of said second computer to receive said notice regarding said stock purchase data in any location wherever he/she desires.

[1934] *<<Timer Email Function>>*

[1935] Figs. 53a and 53b illustrate the method of sending emails from Communication Device 200 (Fig. 1) by utilizing a timer.

[1936] Address data, i.e., email address is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system explained in Fig. 3, Fig. 4, Fig. 5, Fig. 13, Fig. 14, Fig. 14a, Fig. 15, Fig. 16 and/or Fig. 17 (S1) and the text data, the text of the email message is input by the same manner (S2). The address data and the text data are automatically saved in RAM 206 (Fig. 1) (S3). The sequence of S1 through S3 is repeated (i.e., writing more than one email) until a specified input signal is input from Input Device 210 (Fig. 1) or by utilizing the voice recognition system explained above. Once inputting both the address data and the text data (which also includes numeric data, images and programs) are completed a timer (not shown) is set by Input Device 210 or by utilizing the voice recognition system (S5), and the timer is incremented periodically (S6) until the timer value equals the predetermined value specified in S5 (S7). A dialing process is continued (S8) until the line is connected (S9) and the text data are sent thereafter to email addresses specified in S1 (S10). All of the emails are sent (S11) and the line is disconnected

thereafter (S12).

[1937] As another embodiment of the present invention a specific time may be input by Input Device 210 and send the text data on the specific time (i.e., a broad meaning of 'timer').

[1938] *<<Timer Email -- Summary>>*

[1939] The foregoing invention may be summarized as the following.

[1940] A communication device comprising a text data input means which inputs one or more text data, a storage means which stores said text data, a sending means which sends said text data which is input by said input means, and a timer means which activates said sending means at a predetermined time wherein said text data input means input said text data, said storage means stores said text data input by said text data input means, said timer means activates said sending means at said predetermined time, and said sending means sends said text data at said predetermined time thereby enabling the user of said communication device to send said text data at said predetermined time at which said user is not able to send said text data.

[1941] *<<Call Blocking Function>>*

[1942] Figs. 54 through 56 illustrates the so-called 'call blocking' function of Communication Device 200 (Fig. 1).

[1943] As illustrated in Fig. 54, RAM 206 (Fig. 1) includes Area 273 and Area 274. Area 273 stores phone numbers that should be blocked. In the example illustrated in Fig. 54, Phone #1, Phone #2, and Phone #3 are blocked. Area 274 stores a message data, preferably a wave data, stating that the phone can not be connected.

[1944] Fig. 55 illustrates the operation of Communication Device 200. When Communication Device 200 receives a call (S1), CPU 211 (Fig. 1) scans Area 273 (Fig. 54) of RAM 206 (S2). If the phone number of the incoming call matches one of the phone numbers stored in Area 273 (S3), CPU 211 sends the message data stored in Area 274 (Fig. 54) of RAM 206 to the caller device (S4) and disconnects the line (S5).

[1945] Fig. 56 illustrates the method of updating Area 273 (Fig. 54) of RAM 206. Assuming that the phone number of the incoming call does not match any of the phone numbers stored in Area 273 of RAM 206 (see S3 of Fig. 55). In that case, Communication Device 200 is connected to the caller device. However, the user of Communication Device 200 may decide to have such number 'blocked' after all. If

that is the case, the user dials '999' while the line is connected. Technically CPU 211 (Fig. 1) periodically checks the signals input from Input Device 210 (Fig. 1) (S1). If the input signal represents a numerical data '999' from Input Device 210 (S2), CPU 211 adds the phone number of the pending call to Area 273 (S3) and sends the message data stored in Area 274 (Fig. 54) of RAM 206 to the caller device (S4). The line is disconnected thereafter (S5).

[1946] Figs. 57 through 59 illustrate another embodiment of the present invention.

[1947] As illustrated in Fig. 57, Host H (not shown) includes Area 403 and Area 404. Area 403 stores phone numbers that should be blocked to be connected to Communication Device 200. In the example illustrated in Fig. 57, Phone #1, Phone #2, and Phone #3 are blocked for Device A; Phone #4, Phone #5, and Phone #6 are blocked for Device B; and Phone #7, Phone #8, and Phone #9 are blocked for Device C. Area 404 stores a message data stating that the phone can not be connected.

[1948] Fig. 58 illustrates the operation of Host H (not shown). Assuming that the caller device is attempting to connect to Device B, Communication Device 200. Host H periodically checks the signals from all Communication Device

200 (S1). If Host H detects a call for Device B (S2), it scans Area 403 (Fig. 57) (S3) and checks whether the phone number of the incoming call matches one of the phone numbers stored therein for Device B (S4). If the phone number of the incoming call does not match any of the phone numbers stored in Area 403, the line is connected to Device B (S5b). On the other hand, if the phone number of the incoming call matches one of the phone numbers stored in Area 403, the line is 'blocked,' i.e., not connected to Device B (S5a) and Host H sends the massage data stored in Area 404 (Fig. 57) to the caller device (S6).

[1949] Fig. 59 illustrates the method of updating Area 403 (Fig. 57) of Host H. Assuming that the phone number of the incoming call does not match any of the phone numbers stored in Area 403 (see S4 of Fig. 58). In that case, Host H allows the connection between the caller device and Communication Device 200, however, the user of Communication Device 200 may decide to have such number 'blocked' after all. If that is the case, the user simply dials '999' while the line is connected. Technically Host H (Fig. 57) periodically checks the signals input from Input Device 210 (Fig. 1) (S1). If the input signal represents '999' from Input Device 210 (Fig. 1) (S2), Host H adds the phone

number of the pending call to Area 403 (S3) and sends the message data stored in Area 404 (Fig. 57) to the caller device (S4). The line is disconnected thereafter (S5).

[1950] As another embodiment of the method illustrated in Fig. 59, Host H (Fig. 57) may delegate some of its tasks to Communication Device 200 (this embodiment is not shown in drawings). Namely, Communication Device 200 periodically checks the signals input from Input Device 210 (Fig. 1). If the input signal represents a numeric data '999' from Input Device 210, Communication Device 200 sends to Host H a block request signal as well as with the phone number of the pending call. Host H, upon receiving the block request signal from Communication Device 200, adds the phone number of the pending call to Area 403 (Fig. 57) and sends the message data stored in Area 404 (Fig. 57) to the caller device. The line is disconnected thereafter.

[1951] *<<Call Blocking -- Summary>>*

[1952] The foregoing invention may be summarized as the following.

[1953] (1) A communication system comprising a communication device and a blocked number storage means wherein an incoming call is prevented from being connected to said

communication device if the phone number of said incoming call is included in said blocked number storage means thereby preventing the user of said communication device from being disturbed from unnecessary calls.

[1954] (2) A communication system comprising a communication device and a blocked number storage means wherein a pending call is disconnected from said communication device if a predetermined signal is input to said communication device and the phone number of said pending call is included in said blocked number storage means thereby preventing the user of said communication device from being disturbed from unnecessary calls.

[1955] *<<Online Payment Function>>*

[1956] Figs. 60 through 64 illustrate the method of online payment by utilizing Communication Device 200 (Fig. 1).

[1957] As illustrated in Fig. 60, Host H includes account data storage Area 405. All of the account data of the users of Communication Device 200 who have signed up for the online payment service are stored in Area 405. In the example described in Fig. 60, Account A stores the relevant account data of the user using Device A; Account B stores the relevant account data of the user using Device B; Account C stores the relevant account data of the user using

Device C; and Account D stores the relevant account data of the user using device D. Here, Devices A, B, C, and D are Communication Device 200.

[1958] Figs. 61a and 61b illustrate the operation of the payer device, Communication Device 200. Assuming that Device A is the payer device and Device B is the payee device. Account A explained in Fig. 60 stores the account data of the user of Device A, and Account B explained in the same drawing stores the account data of the user of Device B. As illustrated in Fig. 61a, LCD 201 (Fig. 1) of Device A displays the balance of Account A by receiving the relevant data from Host H (Fig. 60) (S1). From the signal input from Input Device 210 (Fig. 1), the payer's account and the payee's account are selected (in the present example, Account A as the payer's account and Account B as the payee's account are selected), and the amount of payment and the device ID (in the present example, Device A as the payer's device and Device B as the payee's device) are input via Input Device 210 (S2). If the data input from Input Device 210 is correct (S3), CPU 211 (Fig. 1) of Device A prompts for other payments. If there are other payments to make, the sequence of S1 through S3 is repeated until all of the payments are made (S4). The dialing process is

initiated and repeated thereafter (S5) until the line is connected to Host H (Fig. 60) (S6). Once the line is connected, Device A sends the payment data to Host H (S7). The line is disconnected when all of the payment data including the data produced in S2 are sent to Host H (S8 and S9).

[1959] Fig. 62 illustrates the payment data described in S7 of Fig. 61b. Payment data 620 is composed of Header 621, Payer's Account Information 622, Payee's Account Information 623, amount data 624, device ID data 625, and Footer 615. Payer's Account Information 622 represents the information regarding the payer's account data stored in Host H (Fig. 60) which is, in the present example, Account A. Payee's Account Information 623 represents the information regarding the payee's account data stored in Host H which is, in the present example, Account B. Amount Data 624 represents the amount of monetary value either in the U.S. dollars or in other currencies which is to be transferred from the payer's account to the payee's account. The device ID data represents the data of the payer's device and the payee's device, i.e., in the present example, Device A and Device B.

[1960] Fig. 63 illustrates the basic structure of the payment data described in S7 of Fig. 61b when multiple payments are

made, i.e., when more than one payment is made in S4 of Fig. 61a. Assuming that three payments are made in S4 of Fig. 61a. In that case, Payment Data 630 is composed of Header 631, Footer 635, and three data sets, i.e., Data Set 632, Data Set 633, Data Set 634. Each data set represents the data components described in Fig. 62 excluding Header 621 and Footer 615.

[1961] Fig. 64 illustrates the operation of Host H (Fig. 60). After receiving payment data from Device A described in Figs. 62 and 63, Host H retrieves therefrom the payer's account information (in the present example Account A), the payee's account information (in the present example Account B), the amount data which represents the monetary value, and the device IDs of both the payer's device and the payee's device (in the present example Device A and Device B) (S1). Host H, based on such data, subtracts the monetary value represented by the amount data from the payer's account (in the present example Account A) (S2), and adds the same amount to the payee's account (in the present example Account B) (S3). If there are other payments to make, i.e., if Host H received a payment data which has a structure of the one described in Fig. 63, the sequence of S2 and S3 is repeated as many times as the

amount of the data sets are included in such payment data.

[1962] *<<Online Payment -- Summary>>*

[1963] The foregoing invention may be summarized as the following.

[1964] An online payment system comprising a host and a first device and a second device wherein said host and said first device are connected in a wireless fashion; said host and said second device are also connected in a wireless fashion; said host stores a first account data of said first device and a second account data of said second device; a payment data which includes an amount data representing monetary value, said first account data, and said second account data is input into said first device; said payment data is sent to said host in a wireless fashion; and said host subtracts the value represented by said amount data from said first account data and adds the same value to said second account data thereby enables the users of said first device and said second device to initiate transactions and payments at any location wherever they desire.

[1965] *<<Navigation System>>*

[1966] Figs. 65 through 74 illustrate the navigation system of Communication Device 200 (Fig. 1).

[1967] As illustrated in Fig. 65, RAM 206 (Fig. 1) includes Area 275, Area 276, Area 277, and Area 295. Area 275 stores a plurality of map data, two-dimensional (2D) image data, which are designed to be displayed on LCD 201 (Fig. 1). Area 276 stores a plurality of object data, three-dimensional (3D) image data, which are also designed to be displayed on LCD 201. The object data are primarily displayed by a method so-called 'texture mapping' which is explained in details hereinafter. Here, the object data include the three-dimensional data of various types of objects that are displayed on LCD 201, such as bridges, houses, hotels, motels, inns, gas stations, restaurants, streets, traffic lights, street signs, trees, etc. Area 277 stores a plurality of location data, i.e., data representing the locations of the objects stored in Area 276. Area 277 also stores a plurality of data representing the street address of each object stored in Area 276. In addition, Area 277 stores the current position data of Communication Device 200 and the Destination Data which are explained in details hereafter. The map data stored in Area 275 and the location data stored in Area 277 are linked each other.

Area 295 stores a plurality of attribution data attributing to the map data stored in Area 275 and location data stored in Area 277, such as road blocks, traffic accidents, and road constructions, and traffic jams. The attribution data stored in Area 295 is updated periodically by receiving an updated data from a host (not shown).

[1968] As illustrated in Fig. 66, Video Processor 202 (Fig. 1) includes texture mapping processor 290. Texture mapping processor 290 produces polygons in a three-dimensional space and 'pastes' textures to each polygon. The concept of such method is described in the following patents and the references cited thereof: U.S. Pat. No. 5,870.101, U.S. Pat. No. 6,157,384, U.S. Pat. No. 5,774,125, U.S. Pat. No. 5,375,206, and/or U.S. Pat. No. 5,925,127.

[1969] As illustrated in Fig. 67, the voice recognition system is activated when the CPU 211 (Fig. 1) detects a specific signal input from Input Device 210 (Fig. 1) (S1). After the voice recognition system is activated, the input current position mode starts and the current position of Communication Device 200 is input by voice recognition system explained in Fig. 3, Fig. 4, Fig. 5, Fig. 13, Fig. 14, Fig. 14a, Fig. 15, Fig. 16 and/or Fig. 17 (S2). The current position can also be input from Input Device 210. As another em-

bodiment of the present invention, the current position can automatically be detected by the method so-called 'global positioning system' or 'GPS' as illustrated in Figs. 20a through 26 and input the current data therefrom. After the process of inputting the current data is completed, the input destination mode starts and the destination is input by the voice recognition system explained above or by the Input Device 210 (S3), and the voice recognition system is deactivated after the process of inputting the Destination Data is completed by utilizing such system (S4).

[1970] Fig. 68 illustrates the sequence of the input current position mode described in S2 of Fig. 67. When analog audio data is input from Microphone 215 (Fig. 1) (S1), such data is converted into digital audio data by A/D 213 (Fig. 1) (S2). The digital audio data is processed by Sound Processor 205 (Fig. 1) to retrieve text and numeric data therefrom (S3). The retrieved data is displayed on LCD 201 (Fig. 1) (S4). The data can be corrected by repeating the sequence of S1 through S4 until the correct data is displayed (S5). If the correct data is displayed, such data is registered as current position data (S6). As stated above, the current position data can be input manually by Input De-

vice 210 (Fig. 1) and/or can be automatically input by utilizing the method so-called 'global positioning system' or 'GPS' as described hereinbefore.

[1971] Fig. 69 illustrates the sequence of the input destination mode described in S3 of Fig. 67. When analog audio data is input from Microphone 215 (Fig. 1) (S1), such data is converted into digital audio data by A/D 213 (Fig. 1) (S2). The digital audio data is processed by Sound Processor 205 (Fig. 1) to retrieve text and numeric data therefrom (S3). The retrieved data is displayed on LCD 201 (Fig. 1) (S4). The data can be corrected by repeating the sequence of S1 through S4 until the correct data is displayed on LCD 201 (S5). If the correct data is displayed, such data is registered as Destination Data (S6).

[1972] Fig. 70 illustrates the sequence of displaying the shortest route from the current position to the destination. CPU 211 (Fig. 1) retrieves both the current position data and the Destination Data which are input by the method described in Figs. 67 through 69 from Area 277 (Fig. 65) of RAM 206 (Fig. 1). By utilizing the location data of streets, bridges, traffic lights and other relevant data, CPU 211 calculates the shortest route to the destination (S1). CPU 211 then retrieves the relevant two-dimensional map data

which should be displayed on LCD 201 from Area 275 (Fig. 65) of RAM 206 (S2).

[1973] As another embodiment of the present invention, by way of utilizing the location data stored in Area 277, CPU 211 may produce a three-dimensional map by composing the three dimensional objects (by method so-called 'texture mapping' as described above) which are stored in Area 276 (Fig. 65) of RAM 206. The two-dimensional map and/or the three dimensional map is displayed on LCD 201 (Fig. 1) (S3).

[1974] As another embodiment of the present invention, the attribution data stored in Area 295 (Fig. 65) of RAM 206 may be utilized. Namely if any road block, traffic accident, road construction, and/or traffic jam is included in the shortest route calculated by the method mentioned above, CPU 211 (Fig. 1) calculates the second shortest route to the destination. If the second shortest route still includes road block, traffic accident, road construction, and/or traffic jam, CPU 211 calculates the third shortest route to the destination. CPU 211 calculates repeatedly until the calculated route does not include any road block, traffic accident, road construction, and/or traffic jam. The shortest route to the destination is highlighted by a significant

color (such as red) to enable the user of Communication Device 200 to easily recognize such route on LCD 201 (Fig. 1).

[1975] As another embodiment of the present invention, an image which is similar to the one which is observed by the user in the real world may be displayed on LCD 201 (Fig. 1) by utilizing the three-dimensional object data. In order to produce such image, CPU 211 (Fig. 1) identifies the present location and retrieves the corresponding location data from Area 277 (Fig. 65) of RAM 206. Then CPU 211 retrieves a plurality of object data which correspond to such location data from Area 276 (Fig. 65) of RAM 206 and displays a plurality of objects on LCD 201 based on such object data in a manner the user of Communication Device 200 may observe from the current location.

[1976] Fig. 71 illustrates the sequence of updating the shortest route to the destination while Communication Device 200 is moving. By way of periodically and automatically inputting the current position by the method so-called 'global positioning system' or 'GPS' as described hereinbefore, the current position is continuously updated (S1). By utilizing the location data of streets and traffic lights and other relevant data, CPU 211 (Fig. 1) recalculates the

shortest route to the destination (S2). CPU 211 then retrieves the relevant two-dimensional map data which should be displayed on LCD 201 from Area 275 (Fig. 65) of RAM 206 (S3). Instead, by way of utilizing the location data stored in Area 277 (Fig. 65), CPU 211 may produce a three-dimensional map by composing the three dimensional objects by method so-called 'texture mapping' which are stored in Area 276 (Fig. 65) of RAM 206. The two-dimensional map and/or the three-dimensional map is displayed on LCD 201 (Fig. 1) (S4). The shortest route to the destination is re-highlighted by a significant color (such as red) to enable the user of Communication Device 200 to easily recognize the updated route on LCD 201.

[1977] Fig. 72 illustrates the method of finding the shortest location of the desired facility, such as restaurant, hotel, gas station, etc. The voice recognition system is activated in the manner described in Fig. 67 (S1). By way of utilizing the voice recognition system, a certain type of facility is selected from the options displayed on LCD 201 (Fig. 1). The prepared options can be a) restaurant, b) lodge, and c) gas station (S2). Once one of the options is selected, CPU 211 (Fig. 1) calculates and inputs the current position by the method described in Fig. 68 and/or Fig. 71 (S3).

From the data selected in S2, CPU 211 scans Area 277 (Fig. 65) of RAM 206 and searches the location of the facilities of the selected category (such as restaurant) which is the closest to the current position (S4). CPU 211 then retrieves the relevant two-dimensional map data which should be displayed on LCD 201 from Area 275 of RAM 206 (Fig. 65) (S5). Instead, by way of utilizing the location data stored in 277 (Fig. 65), CPU 211 may produce a three-dimensional map by composing the three dimensional objects by method so-called 'texture mapping' which are stored in Area 276 (Fig. 65) of RAM 206. The two-dimensional map and/or the three dimensional map is displayed on LCD 201 (Fig. 1) (S6). The shortest route to the destination is re-highlighted by a significant color (such as red) to enable the user of Communication Device 200 to easily recognize the updated route on LCD 201. The voice recognition system is deactivated thereafter (S7).

[1978] Fig. 73 illustrates the method of displaying the time and distance to the destination. As illustrated in Fig. 73, CPU 211 (Fig. 1) calculates the current position wherein the source data can be input from the method described in Fig. 68 and/or Fig. 71 (S1). The distance is calculated

from the method described in Fig. 70 (S2). The speed is calculated from the distance which Communication Device 200 has proceeded within specific period of time (S3). The distance to the destination and the time left are displayed on LCD 201 (Fig. 1) (S4 and S5).

[1979] Fig. 74 illustrates the method of warning and giving instructions when the user of Communication Device 200 deviates from the correct route. By way of periodically and automatically inputting the current position by the method so-called 'global positioning system' or 'GPS' as described hereinbefore, the current position is continuously updated (S1). If the current position deviates from the correct route (S2), a warning is given from Speaker 216 (Fig. 1) and/or on LCD 201 (Fig. 1) (S3). The method described in Fig. 74 is repeated for a certain period of time. If the deviation still exists after such period of time has passed, CPU 211 (Fig. 1) initiates the sequence described in Fig. 70 and calculates the shortest route to the destination and display it on LCD 201. The details of such sequence is as same as the one explained in Fig. 70.

[1980] Fig. 74a illustrates the overall operation of Communication Device 200 regarding the navigation system and the communication system. When Communication Device 200

receives data from Antenna 218 (Fig. 1) (S1), CPU 211 (Fig. 1) determines whether the data is navigation data, i.e., data necessary to operate the navigation system (S2). If the data received is a navigation data, the navigation system described in Figs. 67 through 74 is performed (S3). On the other hand, if the data received is a communication data (S4), the communication system, i.e., the system necessary for wireless communication which is mainly described in Fig. 1 is performed (S5).

[1981] *<<Navigation System -- Summary>>*

[1982] The foregoing inventions may be summarized as the following.

[1983] (1) A GPS navigation device comprising a display, a microphone, a GPS navigation system which identifies the present location of said GPS navigation device, and a voice recognition system which retrieves a text and numeric data from an analog audio input from said microphone wherein said analog audio is input to said microphone, said voice recognition system retrieves said text and numeric data from said analog audio, said text and numeric data is input to said GPS navigation system thereby enabling the user of said GPS navigation device to input necessary data therein without using his/her hands and/or

without physically contacting said GPS navigation device and utilizing said GPS navigation system.

[1984] (2) A communication device comprising a GPS navigation system, a wireless communication system, and an antenna wherein said antenna receives navigation data which is necessary to operate said GPS navigation system, and said antenna also receives communication data which is necessary to operate said wireless communication system thereby enabling said communication device to be compact and also enabling the user of said communication device to find directions by utilizing said GPS navigation system as well as using said wireless communication system.

[1985] (3) A GPS navigation device comprising a display means, a navigation system which identifies the present location of said GPS navigation device, a storage means which stores a plurality of object data which is a three-dimensional data of object that is displayed on said display means and a plurality of location data which represents the location of said object wherein based on a specific information produced by said navigation system a specific location data is selected from said storage means, a plurality of said object data which corresponds to said location data is

retrieved from said storage means, and said plurality of said object data is displayed on said display means in a manner the user of said GPS navigation device observes from the current location of said GPS navigation device thereby enables said user of said GPS navigation device to have a realistic view from said current location on said display means.

[1986] (4) A GPS navigation device comprising a display means, a navigation system which identifies the shortest route from a first location to a second location, a storage means which stores a plurality of location data which is categorized in one or more groups wherein when a certain group is selected, said navigation system retrieves a plurality of location data pertaining to said certain group, and identifies the shortest route to one of the location data pertaining to said certain group thereby enables the user of said GPS navigation device to take the shortest route from said user's present location to the location of said certain group.

[1987] (5) A GPS navigation device comprising a display means, a navigation system which identifies the shortest route from a first location to a second location, a storage means which stores a plurality of attribution data wherein said

shortest route is calculated by referring to said plurality of attribution data thereby enabling the user of said GPS navigation device to reach said second location within shorter period time by way of avoiding road blocks, traffic accidents, road constructions, and traffic jams.

[1988] *<<Remote Controlling System>>*

[1989] Figs. 75 through 83 illustrate the remote controlling system utilizing Communication Device 200 (Fig. 1).

[1990] As illustrated in Fig. 75, Communication Device 200 is connected to Network NT. Network NT may be the internet or have the same or similar structure described in Fig. 2a, Fig. 2b and/or Fig. 2c except 'Device B' is substituted to 'Sub-host SH' in these drawings. Network NT is connected to Sub-host SH in a wireless fashion. Sub-host SH administers various kinds of equipment installed in building 801, such as TV 802, Microwave Oven 803, VCR 804, Bathroom 805, Room Light 806, AC 807, Heater 808, Door 809, and CCD camera 810. Communication Device 200 transfers a control signal to Network NT in a wireless fashion via Antenna 218 (Fig. 1), and Network NT forwards the control signal in a wireless fashion to Sub-host SH, which controls the selected equipment based on the control signal. Communication deive 200 is also capable

to connect to Sub-host SH without going through Network NT and transfer directly the control signal to Sub-host SH in a wireless fashion via Antenna 218.

[1991] As illustrated in Fig. 76, Communication Device 200 is enabled to perform the remote controlling system when the device is set to the home equipment controlling mode. Once Communication Device 200 is set to the home equipment controlling mode, LCD 201 (Fig. 1) displays all pieces of equipment which are remotely controllable by Communication Device 200. Each equipment can be controllable by the following method.

[1992] Fig. 77 illustrates the method of remotely controlling TV 802. In order to check the status of TV 802, a specific signal is input from Input Device 210 (Fig. 1) or by the voice recognition system, and Communication Device 200 thereby sends a check request signal to Sub-host SH via Network NT. Sub-host SH, upon receiving the check request signal, checks the status of TV 802, i.e., the status of the power (ON/OFF), the channel, and the timer of TV 802 (S1), and returns the results to Communication Device 200 via Network NT, which are displayed on LCD 201 (Fig. 1) (S2). Based on the control signal produced by Communication Device 200, which is transferred via Network NT,

Sub-host SH turns the power on (or off) (S3a), selects the channel (S3b), and/or sets the timer of TV 802 (S3c). The sequence of S2 and S3 can be repeated (S4).

[1993] Fig. 78 illustrates the method of remotely controlling Microwave Oven 803. In order to check the status of Microwave Oven 803, a specific signal is input from Input Device 210 (Fig. 1) or by the voice recognition system, and Communication Device 200 thereby sends a check request signal to Sub-host SH via Network NT. Sub-host SH, upon receiving the check request signal, checks the status of Microwave Oven 803, i.e., the status of the power (ON/OFF), the status of temperature, and the timer of Microwave Oven 803 (S1), and returns the results to Communication Device 200 via Network NT, which are displayed on LCD 201 (Fig. 1) (S2). Based on the control signal produced by Communication Device 200, which is transferred via Network NT, Sub-host SH turns the power on (or off) (S3a), selects the temperature (S3b), and/or sets the timer of Microwave Oven 803 (S3c). The sequence of S2 and S3 can be repeated (S4).

[1994] Fig. 79 illustrates the method of remotely controlling VCR 804. In order to check the status of VCR 804, a specific signal is input from Input Device 210 (Fig. 1) or by the

voice recognition system, and Communication Device 200 thereby sends a check request signal to Sub-host SH via Network NT. Sub-host SH, upon receiving the check request signal, checks the status of VCR 804, i.e., the status of the power (ON/OFF), the channel, the timer, and the status of the recording mode (e.g., one day, weekdays, or weekly) of VCR 804 (S1), and returns the results to Communication Device 200 via Network NT, which are displayed on LCD 201 (Fig. 1) (S2). Based on the control signal produced by Communication Device 200, which is transferred via Network NT, Sub-host SH turns the power on (or off) (S3a), selects the TV channel (S3b), sets the timer (S3c), and/or selects the recording mode of VCR 804 (S3d). The sequence of S2 and S3 can be repeated (S4).

[1995] Fig. 80 illustrates the method of remotely controlling Bathroom 805. In order to check the status of Bathroom 805, a specific signal is input from Input Device 210 (Fig. 1) or by the voice recognition system, and Communication Device 200 thereby sends a check request signal to Sub-host SH via Network NT. Sub-host SH, upon receiving the check request signal, checks the status of Bathroom 805, i.e., the status of the bath plug (or the stopper for bathtub) (OPEN/CLOSE), the temperature, the amount of hot

water, and the timer of Bathroom 805 (S1), and returns the results to Communication Device 200 via Network NT, which are displayed on LCD 201 (Fig. 1) (S2). Based on the control signal produced by Communication Device 200, which is transferred via Network NT, Sub-host SH opens (or closes) the bath plug (S3a), selects the temperature (S3b), selects the amount of hot water (S3c), and/or sets the timer of Bathroom 805 (S3d). The sequence of S2 and S3 can be repeated (S4).

[1996] Fig. 81 illustrates the method of remotely controlling AC 807 and Heater 808. In order to check the status of AC 807 and/or Heater 808 a specific signal is input from Input Device 210 (Fig. 1) or by the voice recognition system, and Communication Device 200 thereby sends a check request signal to Sub-host SH via Network NT. Sub-host SH, upon receiving the check request signal, checks the status of AC 807 and/or Heater 808, i.e., the status of the power (ON/OFF), the status of temperature, and the timer of AC 807 and/or Heater 808 (S1), and returns the results to Communication Device 200 via Network NT, which are displayed on LCD 201 (Fig. 1) (S2). Based on the control signal produced by Communication Device 200, which is transferred via Network NT, Sub-host SH turns the power

on (or off) (S3a), selects the temperature (S3b), and/or sets the timer of AC 807 and/or Heater 808 (S3c). The sequence of S2 and S3 can be repeated (S4).

[1997] Fig. 82 illustrates the method of remotely controlling Door 809. In order to check the status of Door 809 a specific signal is input from Input Device 210 (Fig. 1) or by the voice recognition system, and Communication Device 200 thereby sends a check request signal to Sub-host SH via Network NT. Sub-host SH, upon receiving the check request signal, checks the status of Door 809, i.e., the status of the door lock (LOCKED/UNLOCKED), and the timer of door lock (S1), and returns the results to Communication Device 200 via Network NT, which are displayed on LCD 201 (Fig. 1) (S2). Based on the control signal produced by Communication Device 200, which is transferred via Network NT, Sub-host SH locks (or unlocks) the door (S3a), and/or sets the timer of the door lock (S3b). The sequence of S2 and S3 can be repeated (S4).

[1998] Fig. 83 illustrates the method of CCD Camera 810. In order to check the status of CCD Camera 810 a specific signal is input from Input Device 210 (Fig. 1) or by the voice recognition system, and Communication Device 200 thereby sends a check request signal to Sub-host SH via

Network NT. Sub-host SH, upon receiving the check request signal, checks the status of CCD Camera 810, i.e., the status of the camera angle, zoom and pan, and the timer of CCD Camera 810 (S1), and returns the results to Communication Device 200 via Network NT, which are displayed on LCD 201 (Fig. 1) (S2). Based on the control signal produced by Communication Device 200, which is transferred via Network NT, Sub-host SH selects the camera angle (S3a), selects zoom or pan (S3b), and/or sets the timer of CCD Camera 810 (S3c). The sequence of S2 and S3 can be repeated (S4).

[1999] Fig. 84 illustrates the overall operation of Communication Device 200 regarding the remote controlling system and communication system. CPU 211 (Fig. 1) periodically checks the input signal from Input Device 210 (Fig. 1) (S1). If the input signal indicates that the remote controlling system is selected (S2), CPU 211 initiates the process for the remote controlling system (S3). On the other hand, if the input signal indicates that the communication system is selected (S4), CPU 211 initiates the process for the communication system (S5).

[2000] Fig. 85 is a further description of the communication performed between Sub-host SH and Door 809 which is de-

scribed in Fig. 82. When Sub-host SH receives a check request signal as described in Fig. 82, Sub-host SH sends a check status signal which is received by Controller 831 via Transmitter 830. Controller 831 checks the status of Door Lock 832 and sends back a response signal to Sub-host SH via Transmitter 830 in a wireless fashion indicating that Door Lock 832 is locked or unlocked. Upon receiving the response signal from Controller 832, Sub-host SH sends a result signal to Communication Device 200 in a wireless fashion as described in Fig. 82. When Sub-host SH receives a control signal from Communication Device 200 in a wireless fashion as described in Fig. 82, it sends a door control signal which is received by Controller 831 via Transmitter 830. Controller 831 locks or unlocks Door Lock 832 in conformity with the door control signal. As another embodiment of the present invention, Controller 831 may owe the task of both Sub-host SH and itself and communicate directly with Communication Device 200 via Network NT.

[2001] As another embodiment of the present invention each equipment, i.e., TV 802, Microwave Oven 803, VCR 804, Bathroom 805, Room Light 806, AC 807, Heater 808, Door Lock 809, and CCD Camera 810, may carry a com-

puter which directly administers its own equipment and directly communicates with Communication Device 200 via Network NT instead of Sub-host SH administering all pieces of equipment and communicate with Communication Device 200.

[2002] The above-mentioned invention is not limited to equipment installed in building 801 (Fig. 75), i.e., it is also applicable to the ones installed in all carriers in general, such as automobiles, airplanes, space shuttles, ships, motor cycles and trains.

[2003] *<<Remote Controlling System -- Summary>>*

[2004] The foregoing inventions may be summarized as the following.

[2005] (1) A remote controlling system comprising a wireless communication device, an administration device which is capable of communicating with said communication device in a wireless fashion, a plurality of equipment which are subject to control of said administration device wherein said communication device sends a controlling signal to said administration device, said administration device controls said plurality of equipment in conformity with said control signal thereby enabling the user of said remote controlling system to remotely control one or

more of said equipment in a wireless fashion from any location he/she desires and enabling said user to remotely control one or more said equipment as well as using said remote controlling system to communicate with other devices.

[2006] (2) A communication device comprising a remote controlling system which locks or unlocks a door, a wireless communication system, and an antenna wherein said antenna sends a door control signal which is necessary to lock or unlock said door, and said antenna also sends a communication signal which is necessary to operate said wireless communication system thereby enabling said communication device to be compact and also enabling the user of said communication device to lock or unlock said door as well as using said wireless communication system.

[2007] *<<Auto Emergency Calling System>>*

[2008] Figs. 86 and 87 illustrate the automatic emergency calling system utilizing Communication Device 200 (Fig. 1).

[2009] Fig. 86 illustrates the overall structure of the automatic emergency calling system. Communication Device 200 is connected to Network NT in a wireless fashion. Network NT may be the Internet or have the same or similar struc-

ture described in Figs. 2a, and/or 2c. Network NT is connected to Automobile 835 thereby enabling Automobile 835 to communicate with Communication Device 200 in a wireless fashion. Emergency Center EC, a host computer, is also connected to Automobile 835 in a wireless fashion via Network NT. Airbag 838 which prevents persons in Automobile 835 from being physically injured or minimizes such injury in case traffic accidents occur is connected to Activator 840 which activates Airbag 838 when it detects an impact of more than certain level. Detector 837 sends an emergency signal via Transmitter 836 in a wireless fashion when Activator 840 is activated. The activation signal is sent to both Emergency Center EC and Communication Device 200. In lieu of Airbag 838 any equipment may be used so long as such equipment prevents from or minimizes physical injuries of the persons in Automobile 835.

[2010] Fig. 87 illustrates the overall process of the automatic emergency calling system. Detector 837 (Fig. 86) periodically checks the status of Activator 840 (Fig. 86) (S1). If the Activator 840 is activated (S2), Detector 837 transmits an emergency signal via Transmitter 836 in a wireless fashion (S3a). The emergency signal is transferred via

Network NT and received by Emergency Center EC (Fig. 86) and by Communication Device 200 in a wireless fashion (S3b).

[2011] As another embodiment of the present invention, the power of Detector 837 (Fig. 86) may be usually turned off, and Activator 840 (Fig. 86) may turn on the power of Detector 837 by the activation of Activator 840 thereby enabling Detector 837 to send the emergency signal to both Emergency Center EC (Fig. 86) and to Communication Device 200 as described above.

[2012] This invention is also applicable to any carriers including airplanes, space shuttles, ships, motor cycles and trains.

[2013] *<<Auto Emergency Calling System -- Summary>>*

[2014] The foregoing invention may be summarized as the following.

[2015] An automatic emergency calling system comprising a carrier, a network and a host wherein said carrier consists of a physical injury prevention means which prevents persons in said carrier from being physically injured or minimizes such injury, a detector which sends an emergency signal, said detector sends said emergency signal when said physical injury prevention means is activated, said emergency signal is received by said host via said network

thereby enabling to minimize the duration of time of said persons to be rescued.

[2016] *<<Cellular TV Function>>*

[2017] Figs. 88 through 135 illustrate the cellular TV function of the Communication Device 200 (Fig. 1).

[2018] As described in Fig. 88, the cellular TV function of the Communication Device 200 (Fig. 1) is exploited by the combination of TV Server TVS, Host H, Sub-host SHa, Sub-host SHb, Communication Device 200a, and Communication Device 200b. TV Server TVS is electronically linked to Host H, which is also electronically linked to Sub-hosts SHa and SHb. Sub-hosts SHa and SHb are linked to Communication Devices 200a and 200b in a wireless fashion. TV Server TVS stores a plurality of channel data, which are explained in details in Fig. 90 hereinafter. A plurality of channel data are transferred from TV Server TVS to Host H, which distributes such data to Sub-hosts SHa and SHb. Sub-hosts SHa and SHb transfers the plurality of channel data to Communication Devices 200a and 200b respectively via Mobile Signal MS1, i.e., a plurality of wireless signal which enables Communication Devices 200a and 200b to communicate with Sub-hosts SHa and SHb respectively in a wireless fashion, thereby en-

ables to display the channel data on LCD 201 (Fig. 1) installed on each of Communication Devices 200a and 200b.

[2019] Fig. 89 illustrates another embodiment of the cellular TV function of Communication Device 200 (Fig. 1), which utilizes a network. TV Server TVS is electronically linked to Internet Server IS via Network NT, such as the Internet. Internet Server IS is linked to Communication Device 200 in a wireless fashion. A plurality of channel data are distributed from TV Server TVS to Internet Server IS via network NT, which transfers such data to Communication Device 200 via Mobile Signal MS, i.e., a plurality of wireless signal which enables Communication Device 200 to communicate with Internet Server IS in a wireless fashion.

[2020] Fig. 90 illustrates the data stored in TV Server TVS (Figs. 88 and89). In the example shown in Fig. 90, six kinds of channel data are stored. Namely, the channel data regarding Channel 1 is stored in Area TVS1, the channel data regarding Channel 2 is stored in Area TVS2, the channel data regarding Channel 3 is stored in Area TVS3, the channel data regarding Channel 4 is stored in Area TVS4, the channel data regarding Channel 5 is stored in Area TVS5, and the channel data regarding Channel 6 is stored

in Area TVS6. Here, each channel data represents a specific TV program, i.e., each channel data is primarily composed of a series of motion picture data and a series of subtitle data which are designed to be displayed on LCD 201 (Fig. 1) and a series of audio data which are designed to be output from Speaker 216 (Fig. 1).

[2021] Communication Device 200 (Fig. 1) has the capability to display satellite TV programs as illustrated in Fig. 91. Broadcast center BC distributes a plurality of Satellite Signal SS to Satellite 304, which transfers the same series of signals to Communication Device 200, both of which in a wireless fashion. A plurality of Satellite Signal SS include a plurality of channel data.

[2022] Communication Device 200 (Fig. 1) also has the capability to display ground wave TV programs as illustrated in Fig. 92. Broadcast Center BC distributes a plurality of channel data to Tower TW via a fixed cable, which transfers the plurality of channel data via ground wave, i.e., Ground Wave Signal GWS to Communication Device 200.

[2023] Fig. 93 illustrates the basic structure of Signal Processor 208 (Fig. 1). Signal processor 208 is primarily composed of Voice Signal Processor 208a, Non-Voice Signal Processor 208b, TV Signal Processor 208c, and Splitter 208d.

Splitter 208d distributes a plurality of wireless signals received from Antenna 218 (Fig. 1) to Voice Signal Processor 208a, Non-Voice Signal Processor 208b, and TV Signal Processor 208c. Voice Signal Processor 208a processes the voice signal received via Antenna 218 and decodes such signal so as to output the voice signal from Speaker 216 (Fig. 1). Non-Voice Signal Processor 208b processes various kinds of non-voice signals, such as, but not limiting to, channel controlling signals, GPS signals, and internet signals, so as to format and decode the received signals to be readable by CPU 211 (Fig. 1). Packet signals, i.e., a series of signals composed of packets, are also processed by Non-Voice Signal Processor 208b. Packet signals representing voice signals are also processed by Non-Voice Signal Processor 208b. TV Signal Processor 208c processes the plurality of wireless signals received in the manners described in Figs. 88, 89, 91, and 92 in order for the channel data included therein to be decoded and thereby be output from LCD 201 (Fig. 1) and Speaker 216 (Fig. 1).

[2024] Fig. 94 illustrates the basic structure of TV Signal Processor 208c described in Fig. 93. TV Signal Processor 208c is primarily composed of Mobile Signal Processor 208c1,

Satellite Signal Processor 208c2, and Ground Wave Signal Processor 208c3. Mobile Signal Processor 208c1 processes a plurality of mobile signals received in the manners described in Figs. 88 and 89 in order for the channel data included therein to be decoded and thereby be output from LCD 201 (Fig. 1) and Speaker 216 (Fig. 1). Satellite Signal Processor 208c2 processes a plurality of Satellite Signal SS received in the manner described in Fig. 91 in order for the channel data included therein to be decoded and thereby be output from LCD 201 (Fig. 1) and Speaker 216 (Fig. 1). Ground Wave Signal Processor 208c3 processes a plurality of Ground Wave Signal GWS received in the manner described in Fig. 92 in order for the channel data included therein to be decoded and thereby be output from LCD 201 (Fig. 1) and Speaker 216 (Fig. 1).

[2025] As another embodiment of the present invention, Voice Signal Processor 208a (Fig. 98), Non-Voice Signal Processor 208b (Fig. 98), and TV Signal Processor 208c (Fig. 98) may be integrated and merged into one circuit and eliminate Splitter 208d in order to highly integrate Signal Processor 208 (Fig. 1).

[2026] Figs. 95a and 95b illustrate the format of the plurality of channel data transferred described in Figs. 88, 89, 91,

and 92. As described in Fig. 95a, a plurality of channel data can be distributed in a TDMA format. In the example shown in Fig. 95a, Channel Data CH1 is divided into CH1a and CH1b, Channel Data CH2 is divided into CH2a and CH2b, and Channel Data CH3 is divided into CH3a and CH3b, and transferred in the order shown in Fig. 95a. Instead of 'chopping' each channel data as described in Fig. 95a, Channel Data CH1, CH2, and CH3 can be transferred in different frequencies (FDMA format) or scramble all of them and transfer within a certain width of frequency (CDMA or W-CDMA).

[2027] Fig. 96 illustrates the menu displayed on LCD 201 (Fig. 1). In the example described in Fig. 96, the user of Communication Device 200 has an option to select one of the functions installed in Communication Device 200. Namely, the user can, by manipulation of Input Device 210 or by the voice recognition system, utilize Communication Device 200 as a cellular phone by selecting '1. Phone', as an email editor and send and/or receive emails by selecting '2. Email', as a TV monitoring device by selecting '3. TV', as a word processor by selecting '4. Memo', and as an Internet accessing device by selecting '5. Internet'. As illustrated in Fig. 97, a TV screen is displayed on LCD 201 by

selecting '3. TV'.

[2028] Fig. 98 illustrates the software program which administers the overall function explained in Fig. 96. From the kind of the input signal input from Input Device 210 or by the voice recognition system, the related function assigned to such input signal is activated by CPU 211 (Fig. 1) (S1). For example, a phone function is activated when input signal '1' is input from Input Device 210 (S2a), an email function is activated when input signal '2' is input from Input Device 210 (S2b), a TV monitoring function is activated when input signal '3' is input from Input Device 210 (S2c), a word processing function is activated when input signal '4' is input from Input Device 210 (S2d), and an internet function is activated when input signal '5' is input from Input Device 210 (S2e). Another function can be selected from the menu described in Fig. 96 via Input Device 210 or by the voice recognition system after selecting one function, and enables to activate one function while the other function is still running (S3). For example, the user can utilize the phone function while watching TV, or access the Internet while utilizing the phone function.

[2029] Fig. 99 illustrates the information stored in RAM 206 (Fig. 1) in order to implement the foregoing functions. Voice

Data Calculating Area 206a208c3 stores a software program to implement the phone function as described in S2a of Fig. 98, and Voice Data Storage Area 206b stores the voice data received from or sending via Voice Signal Processor 208a (Fig. 93). Email Data Calculating Area 206c stores a software program to implement the email function as described in S2b in Fig. 98, and Email Data Storage Area 206d stores the email data received from or sending via Non-Voice Signal Processor 208b (Fig. 93). TV Data Calculating Area 206e stores a software program to implement the cellular TV function as described in S2c of Fig. 98, and TV Data Storage Area 206f stores the channel data received from TV Signal Processor 208c. Text Data Calculating Area 206g stores a software program to implement the word processing function as described in S2d of Fig. 98, and Text Data Storage Area 206h stores a series of text data which are input and/or edited by utilizing Input Device 210 or via voice recognition system. Internet Data Calculating Area 206i stores a software program to implement the Internet function as described in S2e of Fig. 98, and Internet Data Storage Area 206j stores a series of internet data, such as, but not limited to, HTML data, XML data, image data, audio/visual data, and other

various types of data received from Non-Voice Signal Processor 208b. Some types of voice data, such as the voice data in a form of packet received from or sending via Non-Voice Signal Processor 208b may be stored in Voice Data Storage Area 206b.

[2030] Fig. 100 illustrates the information stored in TV Data Storage Area 206f described in Fig. 99. In the example shown in Fig. 100, three types of channel data are stored in TV Data Storage Area 206f. Namely, channel data regarding Channel 1 is stored in Area 206f1, channel data regarding Channel 2 is stored in Area 206f2, and channel data regarding Channel 3 is stored in Area 206f3. Here, each channel data is primarily composed of a series of motion picture data and a series of subtitle data which are designed to be displayed on LCD 201 (Fig. 1) and a series of audio data which are designed to be output from Speaker 216 (Fig. 1).

[2031] Fig. 101 illustrates the structure of Video Processor 202 described in Fig. 1. Email Data Processing Area 202a processes the email data stored in Email Data Storage Area 206d (Fig. 99) to be displayed on LCD 201 (Fig. 1). TV Data Processing Area 202b processes the channel data stored in TV Data Storage Area 206f (Fig. 99) to be dis-

played on LCD 201 (Fig. 1). Text Data Processing Area 202c processes the text data stored in Text Data Storage Area 206h (Fig. 99) to be displayed on LCD 201 (Fig. 1). Internet Data Processing Area 202d processes the internet data stored in Internet Data Storage Area 206j (Fig. 99) to be displayed on LCD 201 (Fig. 1). As another embodiment of the present invention, Email Data Processing Area 202a, TV Data Processing Area 202b, Text Data Processing Area 202c, and Internet Data Processing Area 202d may be merged into one circuit and delegate its function to CPU 211 (Fig. 1) in order to highly integrate Video Processor 202.

[2032] *<<Cellular TV -- Incoming Message Notice Displaying Function>>*

[2033] Figs. 102 through 104 illustrate the function of displaying a notice of incoming message.

[2034] As described in Fig. 102, Message MS1 is shown at the upper right corner of LCD 201 (Fig. 1) indicating that a new email has arrived while TV monitoring function is implemented.

[2035] Fig. 103 illustrates the data stored in Email Data Calculating Area 206c (Fig. 99) and Email Data Storage Area 206d (Fig. 99) in order to implement the incoming message function. Email Data Calculating Area 206c includes In-

coming Message Calculating Area 206k which stores a software program program described in Fig. 104 hereinafter, and Email Data Storage Area 206d includes Message Data Storage Area (MS1) 206m which stores the text data of MS1 (in the present example, the text data 'Email' as shown in Fig. 102).

[2036] Fig. 104 illustrates the software program stored in Incoming Message Calculating Area 206k (Fig. 103). First of all, CPU 211 (Fig. 1) checks whether a new incoming message has arrived by scanning Email Data Storage Area 206d (Fig. 103) (S1). If a new message has arrived (S2), CPU 211 retrieves the text data (MS1) from Message Data Storage Area (MS1) 206m and displays on LCD 201 (Fig. 1) as described in Fig. 102 for a specified period of time (S3). The software program is executed periodically with a fixed interval.

[2037] *<<Cellular TV -- Video Recording Function>>*

[2038] Figs. 105 through 108 illustrate the function of video recording the TV programs, i.e., a series of channel data, of Communication Device 200 (Fig. 1).

[2039] As described in Fig. 105, Message MS2 is shown on LCD 201 (Fig. 1) when the video recording function is implemented, and Message MS3 is shown when the implemen-

tation of the video recording function has been terminated.

[2040] Fig. 106 illustrates the information stored in TV Data Calculating Area 206e (Fig. 99) and TV Data Storage Area 206f (Fig. 99) in order to implement the video recording function. TV Data Calculating Area 206e includes Video Record Calculating Area 206n which stores a software program to implement the present function which is further explained in details in Figs. 107 and 108. TV Data Storage Area 206f includes Video Data Storage Area 206o and Message Data Storage Area (MS2, MS3) 206p. Video Data Storage Area 206o stores the recorded channel data retrieved from TV Data Storage Area 206f, more specifically from either Area 206f1, Area 206f2, or Area 206f3 described in Fig. 100. Video Storage Area 206o is divided into several sectors (not shown), therefore a plurality of channel data can be recorded and stored simultaneously.

[2041] Fig. 107 illustrates the software program stored in Video Record Calculating Area 206n. When a certain channel data (i.e., TV program) has been selected and start recording signal has been input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1), CPU 211 (Fig. 1) initiates the recording process, i.e., retrieves the

relevant channel data from either Area 206f1, Area 206f2, or Area 206f3 described in Fig. 100 and stores in one sector (not shown) in Video Data Storage Area 206o (Fig. 106) (S2). During the recording process, the text data of Message MS2 is retrieved from Message Data Storage Area (MS2, MS3) 206p (Fig. 106) and displayed at the upper right corner of LCD 201 (Fig. 1) as described in Fig. 105 indicating that the video recording function is in process (S3). If the stop recording signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system indicating to stop the video recording process (S4), CPU 211 stops the video recording process (S5), and retrieves the text data of Message MS3 from Message Data Storage Area (MS2, MS3) 206p and displays at the upper right corner of LCD 201 as shown in Fig. 105 for a specified period of time (S6). Since Video Storage Area 206o is divided into several sectors as stated above, S1 from S6 can be repeated to record and store a plurality of channel data simultaneously.

[2042] Fig. 108 illustrates the software program stored in Video Record Calculating Area 206n to playback the recorded channel data. First, a channel data is selected and playback signal is input by utilizing Input Device 210 (Fig. 1)

or via voice recognition system (S1). Once these signals are received, CPU 211 (Fig. 1) initiates the playback process of the recorded channel data, i.e., CPU 211 retrieves the selected channel data from Video Data Storage Area 206o (Fig. 106), and TV data processing Area 202b (Fig. 101) of Video Processor 202 (Fig. 1) processes the channel data to be displayed on LCD 201 (Fig. 1) (S2). This playback process continues until a stop playback signal is input by utilizing Input Device 210 or via voice recognition system (S3). When a stop playback signal is input by utilizing Input Device 210 or via voice recognition system, CPU 211 stops the foregoing processes, and retrieves the text data of Message MS3 from Message Data Storage Area (MS2, MS3) 206p and displays at the upper right corner of LCD 201 as shown in Fig. 105 for a specified period of time (S4).

[2043] *<<Cellular TV -- Screen Shot Function>>*

[2044] Figs. 109 through 112 illustrate the function of screen shot of Communication Device 200 (Fig. 1), i.e., a function to capture the screen displayed on LCD 201 (Fig. 1) and store it as a single image.

[2045] As described in Fig. 109, Message MS4 is shown on LCD 201 (Fig. 1) when the screen shot function is imple-

mented.

[2046] Fig. 110 illustrates the information stored in TV Data Calculating Area 206e (Fig. 99) and TV Data Storage Area 206f (Fig. 99) in order to implement the screen shot function. TV Data Calculating Area 206e includes Screen Shot Calculating Area 206q which stores a software program to implement the present function which is further explained in details in Figs. 111 and 112. TV Data Storage Area 206f includes Screen Shot Data Storage Area 206r and Message Data Storage Area (MS4) 206s. Screen Shot Data Storage Area 206r stores the recorded image data retrieved from TV Data Storage Area 206f, more specifically from either Area 206f1, Area 206f2, or Area 206f3 described in Fig. 100. Screen Shot Storage Area 206r is divided into several sectors (not shown), therefore a plurality of image data can be recorded and stored simultaneously.

[2047] Fig. 111 illustrates the software program stored in Screen Shot Calculating Area 206q. When a start recording signal has been input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1), CPU 211 (Fig. 1) initiates the recording process, i.e., retrieves an image data, which is currently displayed on LCD 201 (Fig. 1), from the relevant area of TV Data Storage Area 206f, i.e., from either

Area 206f1, Area 206f2, or Area 206f3 described in Fig. 100, and stores in one of the sectors (not shown) in Screen Shot Data Storage Area 206r (Fig. 110) (S2). CPU 211 retrieves the text data of Message MS4 from Message Data Storage Area (MS4) 206s (Fig. 110) and displays at the upper right corner of LCD 201 (Fig. 1) as described in Fig. 109 for a specific period of time indicating that the screen shot function is implemented (S3). Then CPU 211 retrieves the image data which is just stored in Screen Shot Data Storage Area 206r (Fig. 110), and TV Data Processing Area 202b (Fig. 101) of Video Processor 202 (Fig. 1) processes the image data to be displayed on LCD 201 (Fig. 1) for a specific period of time (S4). Since screen shot storage Area 206r is divided into several sectors as stated above, S1 from S4 can be repeated to record and store a plurality of image data.

[2048] Fig 112 illustrates the software program stored in Screen Shot Calculating Area 206q (Fig. 110) to display the recorded image data. First, an image data is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). When this signal is received, CPU 211 (Fig. 1) initiates the display process of the recorded image data, i.e., CPU 211 retrieves the selected image data from

Screen Shot Data Storage Area 206r, and TV Data Processing Area 202b (Fig. 101) of Video Processor 202 (Fig. 1) processes the image data to be displayed on LCD 201 (Fig. 1) (S2). The image data is displayed until a close signal is input by utilizing Input Device 210 or via voice recognition system (S3). When a close signal is input by utilizing Input Device 210 or via voice recognition system, CPU 211 terminates to display the image data (S4).

[2049] *<<Cellular TV -- Timer Video Recording Function(1)>>*

[2050] Figs. 113 through 118 illustrate the timer video recording function of Communication Device 200 (Fig. 1), i.e., a function to video record the TV programs (a series of channel data) at specified times.

[2051] Fig. 113 illustrates the items which are input by utilizing Input Device 210 (Fig. 1) or via voice recognition system. As described in Fig. 113, the items which are input by utilizing Input Device 210 or via voice recognition system are displayed on LCD 201. Here, the items are the channel number to be recorded, the start time from which the recording should be started (including day, date, and time), the stop time until which the recording should be continued (including day, date, and time), and the mode which represents the high quality mode, the standard

mode, the 'x3 mode' and the 'x6 mode'. The high quality mode records the selected TV program (i.e., channel data) with the best quality, however, the available length of time to record is limited. The standard mode records the selected TV program with the standard quality, and the available length of time to record is fairly long. The 'x3 mode' records the selected TV program with lesser quality compared to the standard mode, however, the available length of time to record is fairly long compared to the standard mode. The 'x6 mode' records the selected TV program with lesser quality compared to the 'x3 mode', however, the available length of time to record is fairly long compared to the 'x3 mode'.

[2052] Fig. 114 illustrates the software program stored in Video Record Calculating Area 206n (Fig. 106) to specify the items described in Fig. 113. First of all, the channel number is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). Next, the start time (S2), the stop time (S3), and the mode (S4) are input and/or selected in the same manner. Once the foregoing steps are completed, more series of S1 through S4 can be repeated as many as the user of Communication Device 200 desires (S5). Namely, the function of timer video recording en-

ables to timer record more than one TV programs (i.e., a plurality of channel data).

[2053] Fig. 115 illustrates the software program stored in Video Record Calculating Area 206n (Fig. 106) to implement the timer video recording function. Once the function of timer video recording is initiated by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1), CPU 211 (Fig. 1) checks the current time (S2). If the current time matches the start time specified by the process described in S2 of Fig. 114 (S3), then CPU 211 identifies the channel number to be recorded and the mode selected of which the details are explained in S4 of Fig. 113 (S4), and initiates the recording process of the TV program (i.e., channel data) (S5). CPU 211 continues the recording process until the current time matches the stop time specified by the process described in S3 of Fig. 114 (S6). The recording process is terminated when the current time matches the stop time (S7).

[2054] Fig. 116 illustrates the data stored in video data storage Area 206o (Fig. 106). As described in Fig. 116, Video Data Storage Area 206o is divided into certain areas in order to store a plurality of channel data. In the example presented in Fig. 116, the TV programs (a plurality of channel data)

of channel numbers 1, 2, and 3 are stored in Areas 206o1, 206o2, and 206o3, respectively. Since Video Data Storage Area 206o is divided into certain areas and thereby enables to store a plurality of channel data (here, the channel data of Channel 1, 2, and 3), a plurality of channel data (more than one TV programs) can be recorded simultaneously.

[2055] Fig. 117 illustrates the area in which the items described in Fig. 113 are stored. As described in Fig. 117, the data regarding the channel number to be recorded, the start time from which the recording should be started (including day, date, and time), the stop time until which the recording should be continued (including day, date, and time), and the mode which represents the high quality mode, the standard mode, the 'x3 mode' and the 'x6 mode' are stored in Timer Data Storage Area 206t of RAM 206 (Fig. 1).

[2056] Fig. 118 illustrates the details of Timer Data Storage Area 206t (Fig. 117). Timer Data Storage Area 206t is composed of two types of areas. The first area administers the current time, and the second area stores the items explained in Fig. 113. Here, the first area is Timer 206t4 and provides the current time to CPU 211 (Fig. 1), which is uti-

lized in S3 (initiation of the video recording) and S6 (termination of the video recording) of the flowchart described in Fig. 115. The second area is described as Areas 206t1, 206t2, and 206t3. The number of the second area corresponds with the number of the areas allocated in Video Data Storage Area 206o explained in Fig. 116. Each of Areas 206t1, 206t2, and 206t3 stores the data regarding the channel number to be recorded, the start time from which the recording should be started (including day, date, and time), the stop time until which the recording should be continued (including day, date, and time), and the mode which represents the high quality mode, the standard mode, the 'x3 mode' and the 'x6 mode'. In sum, Area 206t1 stores the start time, the stop time, and the mode for Channel 1, Area 206t2 stores the start time, the stop time, and the mode for Channel 2, and Area 206t3 stores the start time, the stop time, and the mode for Channel 3.

[2057] *<<Cellular TV -- PC Download Function>>*

[2058] Figs. 119 and 120 illustrate the function to download various types of data stored in Communication Device 200 to a personal computer.

[2059] Fig. 119 illustrates the basic components to implement

the present function. As described in Fig. 119, Communication Device 200 transmits a series of PC Download Signal PDS to Personal Computer PC. Such sequence is performed under the control of CPU 211 (Fig. 1). PC Download Signal PDS carries a plurality of data stored in Communication Device 200, more specifically in RAM 206 (Fig. 1). Logically any types of data can be transmitted from Communication Device 200 to Personal Computer PC. For example, data, software program, and other various types of information stored in Voice Data Calculating Area 206a208c3, Voice Data Storage Area 206b, Email Data Calculating Area 206c, Email Data Storage Area 206d, TV Data Calculating Area 206e, TV Data Storage Area 206f, Text Data Calculating Area 206g, Text Data Storage Area 206h, Internet Data Calculating Area 206I, Internet Data Storage Area 206j, all of which are stored in RAM 206 as explained in Fig. 99, can be transmitted from Communication Device 200 to Personal Computer PC.

[2060] The method of transmitting a series of PC Download Signal PDS can be arranged in several ways. The first method is to transmit a series of PC Download Signal PDS directly from Communication Device 200 to Personal Computer PC as described in Fig. 119. In this method, CPU 211 (Fig. 1)

first of all scans the target (i.e., data, software program, or other types of information to be transmitted) and PC Download Signal PDS, which carries such target, is directly transmitted to Personal Computer PC via Antenna 218 (Fig. 1) in a wireless fashion. In order to implement the first method, Personal Computer PC must have the capability to send and receive data in a wireless fashion. The second method is to transmit a series of PC Download Signal PDS indirectly from Communication Device 200 to Personal Computer PC utilizing network, such as the Internet. In this method, CPU 211 (Fig. 1) first of all scans the target (i.e., data, software program, or other types of information to be transmitted) and PC Download Signal PDS, which carries such target, is transmitted to a computer (e.g., the Internet server, however, not shown) or a computer connected thereto (not shown) in a wireless fashion. Here, the computer (e.g., the Internet server) or the computer connected thereto has the capability to send and receive data in a wireless fashion. The computer (e.g., the Internet server) or the computer connected thereto is connected to the network (e.g., the Internet). Then the computer (e.g., the Internet server) or the computer connected thereto transmits the target to Personal Computer

PC via network by an ordinary method commonly utilized to transfer data via network. No capability for Personal Computer PC to send and receive data in a wireless fashion is required in this method. The third method is to transmit a series of PC Download Signal PDS indirectly from Communication Device 200 to personal computer utilizing artificial satellite (not shown). In this method, CPU 211 (Fig. 1) first of all scans the target (i.e., data, software program, or other types of information to be transmitted) and PC Download Signal PDS, which carries such target, is transmitted to an artificial satellite in a wireless fashion. The satellite is connected to a network (e.g., the Internet, however, not shown). Then the satellite transmits the target to Personal Computer PC via network by an ordinary method commonly utilized to transfer data from a satellite via network to a computer connected thereto. No capability for Personal Computer PC to send and receive data in a wireless fashion is required in this method.

[2061] Fig. 120 illustrates the software program stored in a specific area of RAM 206 (Fig. 1) to implement the present function. As described in Fig. 120, a list of data, software program, and other various types of information stored in

RAM 206 is displayed on LCD 201 (Fig. 1) under the control of CPU 211 (Fig. 1) (S1). In the next step, one or more of data, software program, and other various types of information, which are to be the components of the target, are selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2). The method of transmitting the target is selected in the same manner (S3). Once a start signal indicating to initiate the downloading process is input by utilizing Input Device 210 or via voice recognition system (S4), the downloading process is initiated by the method selected in S3 (S5) until the target is completely downloaded to Personal Computer PC (S6). Once CPU 211 (Fig. 1) detects that the target has been completely downloaded to Personal Computer PC to the last bit, the downloading process is terminated (S7).

[2062] *<<Cellular TV -- Sending By Email Function>>*

[2063] Figs. 121 through 123 illustrate the method to send the recorded TV program (i.e., channel data) and screen shot data via emails.

[2064] Fig. 121 illustrates the items displayed on LCD 201 (Fig. 1). By way of utilizing Input Device 210 (Fig. 1) or the voice recognition system, the receiver's address is typed in 'Email Address' column, another email address is typed

in 'CC' column, the title or the subject of the email is typed in 'Subject' column, the locations of recorded TV program (i.e., channel data) and/or screen shot data in RAM 206 (Fig. 1) are typed in 'Attachment', and a series of text data, i.e., a message to the receiver of the email is typed in 'Text' column.

[2065] Fig. 122 illustrates the data stored in RAM 206 (Fig. 1) for purposes of sending the recorded TV program (i.e., channel data) and screen shot data via emails. As described in Fig. 122, RAM 206 (Fig. 1) includes four areas to implement the present function, i.e., Email Information Storage Area 206u, Email Information Calculating Area 206v, Video Data Storage Area 206w, and Screen Shot Data Storage Area 206x. Email Information Storage Area 206u stores the information regarding the items explained in Fig. 121, namely the receiver's address typed in 'Email Address' column, another email address typed in 'CC' column, the title or the subject of the email typed in 'Subject' column, the locations of recorded TV program (i.e., channel data) and/or screen shot data in RAM 206 (Fig. 1) typed in 'Attachment', and a series of text data, i.e., a message to the receiver of the email typed in 'Text' column. Email Information Calculating Area 206v stores the

software program explained in Fig. 123 hereinafter. Video Data Storage Area 206w stores the recorded TV program (i.e., channel data) which is to be attached to and sent by the email. Screen Shot Data Storage Area 206x stores the screen shot data which is to be attached to and sent by the email.

[2066] Fig. 123 illustrates the software program stored in Email Information Calculating Area 206v. First, all the items described in Fig. 121 are input by utilizing Input Device 210 (Fig. 1) or the voice recognition system (S1). Once a send signal is input by utilizing Input Device 210 or via voice recognition system indicating to send the email (S2), CPU 211 (Fig. 1) attaches the recorded TV program (i.e., channel data) and/or the screen shot data stored in Video Data Storage Area 206w and/or Screen Shot Data Storage Area 206x (S3), and the email is sent to the receiver's email address (S4).

[2067] As another embodiment, Video Data Storage Area 206w and Screen Shot Data Storage Area 206x may be omitted, and the recorded TV program (i.e., channel data) may be retrieved directly from Video Data Storage Area 206o (Figs. 106 and/or 116) and the screen shot data may be retrieved directly from Screen Shot Data Storage Area 206r

(Fig. 110).

[2068] *<<Cellular TV -- EZ Recording Function>>*

[2069] Figs. 124 through 126 illustrate the EZ recording function, which is an improvement of the function of the timer video recording illustrated in Figs. 113 through 118. The EZ recording function provides an easy and convenient method to input some of the items displayed on LCD 201 (Fig. 1), i.e., the channel number to be recorded, the start time from which the recording should be started (including day, date, and time), the stop time until which the recording should be continued (including day, date, and time).

[2070] Fig. 124 illustrates the method to input the above mentioned items utilizing the EZ recording function. As illustrated in Fig. 124, a TV listing which presents the channel number, the time from which the TV program starts and the time until which the TV program continues is displayed on LCD 201. For example, TV Program Pr 1 is shown on Channel 1 and starts from 6:00 p.m. and ends at 7:00 p.m.; TV Program Pr 2 is shown on Channel 1 and starts from 7:00 p.m. and ends at 8:00 p.m.; TV Program Pr 3 is shown on Channel 1 and starts from 8:00 p.m. and ends at 9:00 p.m.; TV Program Pr 4 is shown on Channel 2

and starts from 6:00 p.m. and ends at 8:00 p.m.; TV Program Pr 5 is shown on Channel 2 and starts from 8:00 p.m. and ends at 9:00 p.m.; TV Program Pr 6 is shown on Channel 3 and starts from 6:00 p.m. and ends at 7:00 p.m.; and TV Program Pr 7 is shown on Channel 3 and starts from 7:00 p.m. and ends at 9:00 p.m. The TV program displayed on LCD 201 (Fig. 1) is selected by way of utilizing the cursor displayed thereon. In the present example, the cursor is located on TV Program Pr 2.

[2071] Fig. 125 illustrates the software program to implement the EZ recording function. First of all, the TV program which is to be recorded is selected by moving the cursor displayed on LCD 201 (Fig. 1). In the present example shown in Fig. 124, the cursor currently located on TV Program Pr 2 can be moved up and highlight TV Program Pr 1, or instead moved down and highlight TV Program Pr 3. The cursor can move left and highlight TV Program Pr 4. The highlighted TV program is the object of the EZ recording function, and when a specific key is entered by utilizing Input Device 210 (Fig. 1) or via voice recognition system, CPU 211 (Fig. 1) stores the channel number, the start time, and the stop time in Timer Data Storage Area 206t as described in Fig. 118. In the present example

shown in Fig. 124, CPU 211 stores Channel 1 as the channel number, 7:00 p.m. as the start time, and 8:00 p.m. as the stop time in Area 206t1 of Timer Data Storage Area 206t (S1). Next, the mode is selected (S2). The mode represents the high quality mode, the standard mode, the 'x3 mode' and the 'x6 mode'. Here, the high quality mode records the selected TV program (i.e., channel data) with the best quality, however, the available length of time to record is limited. The standard mode records the selected TV program with the standard quality, and the available length of time to record is fairly long. The 'x3 mode' records the selected TV program with lesser quality compared to the standard mode, however, the available length of time to record is fairly long compared to the standard mode. The 'x6 mode' records the selected TV program with lesser quality compared to the 'x3 mode', however, the available length of time to record is fairly long compared to the 'x3 mode' as described in Fig. 113. The method of selecting the mode is same to the one explained in S4 of Fig. 114. The sequence of S1 and S2 can be repeated, and has the same function of the software program explained in Fig. 114, namely a plurality of TV programs can be timer recorded simultaneously (S3). In

the example explained in Fig. 124, TV programs Pr 1, Pr 4, and Pr 6 can be timer recorded simultaneously. All the relevant data are stored in Timer Data Storage Area 206t. Once setting the channel number, the start time, the stop time, and the mode are selected by the above mentioned method, CPU 211 (Fig. 1) starts the timer mode. By way of starting the timer mode, the software program explained in Fig. 115 is initiated (S4).

[2072] Fig. 126 illustrates the data stored in TV Server TVS (Figs. 88, 89 and/or 90). As described in Fig. 126, TV Server TVS contains TV Listing Storage Area TVS 7 to store the up-dated data of the TV listings which are displayed on LCD 201 (Fig. 1) on demand.

[2073] *<<Cellular TV -- Subtitle Displaying Function>>*

[2074] Figs. 127 through 131b illustrate the function to display subtitles on LCD 201 (Fig. 1) of Communication Device 200 (Fig. 1).

[2075] As illustrated in Fig. 127, Subtitle ST is shown on the lower portion of LCD 201 (Fig. 1) when TV screen is displayed thereon.

[2076] Fig. 128 illustrates the software program to implement the function to display Subtitle ST on LCD 201 (Fig. 1). When specific signal is input by utilizing Input Device 210

(Fig. 1) or via voice recognition system indicating to display Subtitle ST (S1), CPU 211 (Fig. 1) retrieves a series of subtitle data from RAM 206 (Fig. 1) and displays Subtitle ST on LCD 201 (Fig. 1).

[2077] Fig. 129 illustrates the relevant information stored in RAM 206 (Fig. 1) in order to implement the function to display Subtitle ST. As described in Fig. 129, TV Data Calculating Area 206e (Fig. 99) includes Subtitle Data Calculating Area 206e1 which stores the software program explained in Fig. 128. In addition, TV Data Storage Area 206f (Fig. 99) includes Subtitle Data Storage Area 206f1 which stores a plurality of text data which are designed to be displayed on LCD 201 (Fig. 1) after being processed by Video Processor 202 (Fig. 1). Two types of text data are stored, i.e., the text code data and the text image data. The text code data identifies the specific text, such as 'A', 'B', and 'C', and the text image data represents the image of each text of 'A', 'B', and 'C' which are to be displayed on LCD 201.

[2078] Fig. 130 illustrates the method to process the text data stored in Subtitle Data Storage Area 206f1 (Fig. 129) in order to be displayed on LCD 201 (Fig. 1). As described in Fig. 130, TV Data Processing Area 202b (Fig. 101) includes Subtitle Data Processing Area 202b1. First of all, a

series of text code data are retrieved from Subtitle Data Storage Area 206f1 (Fig. 129) under the administration of CPU 211 (Fig. 1). Then a series of corresponding text image data are retrieved from Subtitle Data Storage Area 206f1 (Fig. 129) under the administration of CPU 211. The retrieved text image data are then transferred to Subtitle Data Processing Area 202b1. Subtitle Data Processing Area 202b1 processes the retrieved text image data to produce a series of real images (such as adding colors) and the processed images are displayed on LCD 201.

[2079] Figs. 131a and 131b illustrate the information received in a wireless fashion via Antenna 218 (Fig. 1). The information can be received in a TDMA format. In the example described in Fig. 131a, three channel data, i.e., Channel Data 1, Channel Data 2, and Channel Data 3 are received in a wireless fashion via Antenna 218. When utilizing the TDMA format, each channel data and the corresponding subtitle data are divided in to packets, and each packet is transferred and received in turn as described in Fig. 131a. Namely, the first portion of Channel Data 1 (CH1a) and the first portion of the corresponding subtitle data (SD1a) are included in the first packet, the first portion of Channel Data 2 (CH2a) and the first portion of the corresponding

subtitle data (SD2a) are included in the second packet, the first portion of Channel Data 3 (CH3a) and the first portion of the corresponding subtitle data (SD3a) are included in the third packet, the second portion of Channel Data 1 (CH1b) and the second portion of the corresponding subtitle data (SD1b) are included in the fourth packet, the second portion of Channel Data 2 (CH2b) and the second portion of the corresponding subtitle data (SD2b) are included in the fifth packet, and the second portion of Channel Data 3 (CH3b) and the second portion of the corresponding subtitle data (SD3b) are included in the sixth packet.

[2080] On the other hand, the information can be received in a CDMA format or FDMA format. Under these formats, channel data and the corresponding subtitle data can be transferred and received seamlessly compared to the TDMA format. In the example described in Fig. 131b, Channel Data CH1 and the corresponding Subtitle Data SD1, Channel Data CH2 and the corresponding Subtitle Data SD2, and Channel Data CH3 and the corresponding Subtitle Data SD3 are transferred and received simultaneously by utilizing CDMA and/or FDMA format.

[2081] *<<Cellular TV -- Pay Per View Function>>*

[2082] Figs. 132 through 134 illustrate the PPV (pay per view) function of Communication Device 200 (Fig. 1).

[2083] As illustrated in Fig. 132, TV Data Calculation Area 206e (Fig. 99) includes Decoder Storage Area 206e2, i.e., an area which stores a software program to decode a series of encoded channel data. TV Data Storage Area 206f (Fig. 99) includes Encoded TV Data Storage Area 206f2, i.e., an area which stores a series of encoded channel data received via Antenna 218 (Fig. 1) in a wireless fashion, and Authenticated TV Program Information Storage Area 206f3, i.e., an area which stores information regarding the authenticated TV programs.

[2084] Fig. 133 illustrates the sequence of the decoder stored in Decoder Storage Area 206e2 (Fig. 132). First of all, a specific TV program (i.e., channel data) is selected by utilizing Input Device 210 (Fig. 1) or via the voice recognition system (S1). The decoder then retrieves the information stored in Authenticated TV Program Information Storage Area 206f3 and identifies whether the selected TV program is authenticated (S2). If the selected TV program is authenticated, decoder decodes the encoded channel data stored in Encoded TV Data Storage Area 206f2 (Fig. 132) (S3). The decoded channel data is displayed on LCD 201

(Fig. 1) via Video Processor 202 (Fig. 1) (S4).

[2085] The software program illustrated in Fig. 134 updates the information stored in Authenticated TV Program Information Storage Area 206f3 (Fig. 132). The software program is stored in either TV Server TVS (Fig. 90) or Communication Device 200 (Fig. 1). First of all, the payment status of the monthly fee paid by the user of Communication Device 200 is checked periodically, for example at the end of each month (S1). If the monthly payment is not yet paid (S2), and the grace period (e.g., 10 days) for paying the monthly fee has already been expired (S3), the decoder stored in Decoder Storage Area 206e2 (Fig. 132) is erased therefrom and thereby PPV function is no longer available (S4). As another embodiment, the decoder can be frozen instead of being erased for future use.

[2086] PPV function applies to each TV program, i.e., authentication process applies to each TV program (i.e., channel data) and enables the TV program to be viewed on LCD 201 (Fig. 1) only when such TV program is authenticated. However, as another embodiment, PPV function can be applied to each channel number. For example, a whole channel number, such as Channel 3 in Fig. 124, can be blocked and enabled to be viewed by PPV function only

when such channel is authenticated.

[2087] *<<Cellular TV -- Timer Video Recording Function (2)>>*

[2088] Fig. 135 illustrates the second embodiment of the timer video recording function, i.e., the function to video record the TV programs (a plurality of channel data) at specified times of Communication Device 200 (Fig. 1). The primary difference between the timer video recording function illustrated in Fig. 135 (the second embodiment) and the one explained in Figs. 113 through 118 (the first embodiment) is that the former stores the series of channel data in a personal computer which is a separate device from Communication Device 200 (Fig. 1) whereas the latter stores the series of channel data in Communication Device 200 itself.

[2089] In Fig. 135, Communication Device 200 is connected with Personal Computer PC via Network NT. Communication Device 200 and Network NT are electronically linked. Personal computer PC is a computer which is electronically linked to Network NT, such as the Internet. Communication Device 200 transfers to Personal Computer PC a set of Timer Video Recording Signal TVRS, the details of which is explained hereinafter.

[2090] Figs. 113, 114, 115, 116, 117, 118, 124, and 125 are uti-

lized to explain the present embodiment. More precisely, the concept explained in Figs. 113, 114, 124, and 125 apply to Communication Device 200 (Fig. 1), and the concept explained in Figs. 115, 116, 117, and 118 apply to Personal Computer PC (Fig. 135).

[2091] Fig. 113 illustrates the items which are input by utilizing Input Device 210 (Fig. 1) or via voice recognition system. As described in Fig. 113, the items are displayed on LCD 201, i.e., the channel number to be recorded, the start time from which the recording should be started (including day, date, and time), the stop time until which the recording should be continued (including day, date, and time), and the mode which represents the high quality mode, the standard mode, the 'x3 mode' and the 'x6 mode'. Here, the high quality mode records the selected TV program (i.e., channel data) with the best quality, however, the available length of time to record is limited. The standard mode records the selected TV program with the standard quality, and the available length of time to record is fairly long. The 'x3 mode' records the selected TV program with lesser quality compared to the standard mode, however, the available length of time to record is fairly long compared to the standard mode. The 'x6 mode'

records the selected TV program with lesser quality compared to the 'x3 mode', however, the available length of time to record is fairly long compared to the 'x3 mode'.

[2092] Fig. 114 illustrates the software program stored in Video Record Calculating Area 206n (Fig. 106) to specify the items described in Fig. 113. First of all, the channel number is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). Next, the start time (S2), the stop time (S3), and the mode (S4) are input and/or selected by utilizing Input Device 210 or via voice recognition system. Once the foregoing steps are completed, more series of S1 through S4 can be repeated as many as the user of Communication Device 200 desires (S5). Namely, the function of timer video recording enables to timer record more than one TV programs (a plurality of channel data).

[2093] Once the items described in Fig. 113 are identified, the items are incorporated into Timer Video Recording Signal TVRS and transferred to Personal Computer PC via Network NT as described in Fig. 135.

[2094] Personal Computer PC (Fig. 135) has an area therein to store the software program described in Fig. 115, which implements the timer video recording function. Once the

timer video recording function is initiated by receiving Timer Video Recording Signal TVRS (Fig. 135) from Communication Device 200 via Network NT (S1), the CPU of Personal Computer PC checks the current time (S2). If the current time matches the start time retrieved from Timer Video Recording Signal TVRS (S3), then the CPU of Personal Computer PC identifies the channel number to be recorded and the mode selected of which the details are explained in Fig. 113 (S4), and initiates the recording process of the TV program (i.e., channel data) (S5). The CPU of Personal Computer PC continues the recording process until the current time matches the stop time retrieved from Timer Video Recording Signal TVRS (S6). The recording process is terminated when the current time matches the stop time (S7).

[2095] Personal computer PC (Fig. 135) has an area therein which is similar to Video Data Storage Area 206o described in Fig. 116. The area is divided into certain areas in order to store a plurality of channel data as described in Fig. 116. Just as the example presented in Fig. 116, the TV programs (a plurality of channel data) of channel numbers 1, 2, and 3 are stored in each area of Personal Computer PC (which corresponds to Areas 206o1, 206o2, and 206o3 in

Fig. 116). Since each area of Personal Computer PC is divided into certain areas and thereby enables to store a plurality of channel data, a plurality of channel data (more than one TV program) can be recorded simultaneously.

[2096] Personal computer PC (Fig. 135) has an area therein which is similar to Timer Data Storage Area 206t described in Fig. 117. All data are retrieved from Timer Video Recording Signal TVRS (Fig. 135). As described in Fig. 117, the data regarding the channel number to be recorded, the start time from which the recording should be started (including day, date, and time), the stop time until which the recording should be continued (including day, date, and time), and the mode which represents the high quality mode, the standard mode, the 'x3 mode' and the 'x6 mode' are stored in the area of Personal Computer PC.

[2097] The area explained in the previous paragraph is composed of two types of areas. The first area administers the current time, and the second area stores the items explained in Fig. 113. Here, the first area is a timer similar to Timer 206t4 in Fig. 118 and provides the current time to the CPU of Personal Computer PC (Fig. 135), which is utilized in S3 (initiation of the video recording) and S6 (termination of the video recording) of the flowchart de-

scribed in Fig. 115. The second area is similar to Areas 206t1, 206t2, and 206t3 in Fig. 118. The areas of Personal Computer PC corresponding to Areas 206t1, 206t2, and 206t3 in Fig. 118 store the data regarding the channel number to be recorded, the start time from which the recording should be started (including day, date, and time), the stop time until which the recording should be continued (including day, date, and time), and the mode which represents the high quality mode, the standard mode, the 'x3 mode' and the 'x6 mode'. In other words, the area of Personal Computer PC corresponding to Area 206t1 stores the start time, the stop time, and the mode for Channel 1, the area of Personal Computer PC corresponding to Area 206t2 stores the start time, the stop time, and the mode for Channel 2, and the area of Personal Computer PC corresponding to Area 206t3 stores the start time, the stop time, and the mode for Channel 3.

[2098] *<<Cellular TV -- Summary>>*

[2099] The foregoing invention may be summarized as the following.

[2100] A communication device comprising a TV monitoring system, a wireless communication system, and an antenna wherein said antenna receives a plurality of TV data which

are displayed on a display means installed into said communication device, and said antenna also receives communication data which is necessary to operate said wireless communication system thereby enabling the user of said communication device to enjoy watching TV on said display means as well as utilizing said wireless communication system.

[2101] *<<3D Video Game Function>>*

[2102] Figs. 136 through 144 illustrate the video game function of Communication Device 200 (Fig. 1).

[2103] As described in Fig. 136 Host H includes Host Game Data Storage Area Ha. In Host Game Data Storage Area Ha, a plurality of game data are stored for downloading purposes. Games G1, G2, G3, and G4 are stored in Host Game Data Storage Area Ha in the example illustrated in Fig. 136.

[2104] Fig. 137 illustrates the sequence to initiate the game function. First of all, a list of modes is displayed on LCD 201 (Fig. 1) (S1). When an input signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system to select a specific mode (S2), the selected mode is activated. In the present example described in Fig. 137, the communication mode is activated (S3a) when the commu-

nication mode is selected in the previous step, the game download mode is activated (S3b) when the game download mode is selected in the previous step, and the game play mode is activated (S3c) when game play mode is selected in the previous step. The modes displayed on LCD 201 in S1 which are selected and activated in S2 and S3 may include all functions and modes explained in this specification. Once the selected mode is activated, another mode can be activated while the first activated mode is still implemented by going through the steps of S1 through S3 for another mode, thereby enabling a plurality of functions and modes being performed simultaneously (S4). Here, communication mode is a mode which enables Communication Device 200 to communicate (i.e., send and/or receive audio data, text data, image data, video data, and/or other types of data in a wireless fashion via Antenna 218) in a wireless fashion with other Communication Devices 200 or with other devices in the manner, for example, described in Figs. 2a, 2b, and 2c. The same meaning applies hereinafter.

[2105] Fig. 138 illustrates the data stored in RAM 206 (Fig. 1). As described in Fig. 138, the data to activate (as described in S3a of the previous figure) and to perform the communi-

cation mode is stored in Communication Data Storage Area 2061a, the data to activate (as described in S3b of the previous figure) and to perform game download mode is stored in Game DL Data Storage Area 2061b, and the data to activate (as described in S3c of the previous figure) and to perform game play mode is stored in 2061c.

[2106] Fig. 139 illustrates the method of activating and deactivating the game mode by utilizing the voice recognition system explained hereinbefore. The voice recognition system is turned on, in the first place (S1), and the game mode is activated by utilizing the voice recognition system (S2). When utilizing the game mode is over, it is deactivated by utilizing the voice recognition system, and the system is turned off thereafter (S3).

[2107] Fig. 140 illustrates the sequence of downloading a game data, i.e., a game software program, from Host H (Fig. 136). As described in Fig. 140, a list of game data is displayed on LCD 201 (Fig. 1) (S1). When an input signal is input from Input Device 210 or by the voice recognition system to select a specific game data (S2), the selected game data is downloaded to Communication Device 200 and is stored in Game DL Data Storage Area 2061b (Fig. 138) (S3). The downloaded game data is decompressed

thereafter by CPU 211 (Fig. 1).

[2108] Fig. 141 illustrates the data stored in Game Play Data Storage Area 2061c (Fig. 138). The decompressed game data are allocated to the predetermined areas, i.e., Game Software Storage Area 2061d, 3D Object Data Storage Area 2061e, Texture Data Storage Area 2061f, and Game Process Data Storage Area 2061g. Here, Game Software Storage Area 2061d stores a series of software program to perform the game function of Communication Device 200. 3D Object Data Storage Area 2061e stores the three-dimensional data of the three-dimensional objects displayed on LCD 201 (Fig. 1), such as the shape of each three-dimensional object in a polygon form (or in a wire frame form), and the three-dimensional data of all parts (components) of each three-dimensional object. Texture Data Storage Area 2061f stores a plurality of data of textures which are 'pasted' on each three-dimensional object (or on each part thereof) when such three-dimensional object is displayed on LCD 201. Game Process Data Storage Area 2061g stores a plurality of data necessary to process the game software program, such as the strength and speed of each three-dimensional object, the layout of the background displayed on LCD 201, the weather de-

scribed in the game, the property of each shadow displayed adjacent to the three-dimensional object, the movement of the objects which are controllable by the user of Communication Device 200, and the movement of the objects which are not controllable by the user of Communication Device 200.

[2109] Fig. 142 illustrates the sequence of the game software program stored in Game Software Storage Area 2061d (Fig. 141). When the game mode is started by voice recognition system as described in S1 and S2 of Fig. 139, the game initiation process is initiated by CPU 211 (Fig. 1) (S1). Here, CPU 211 reads, by following the instructions written in the game software program stored in Game Software Storage Area 2061d, all the address data stored in 3D Object Data Storage Area 2061e, Texture Data Storage Area 2061f, and Game Process Data Storage Area 2061g to promptly retrieve the required data to process the game when necessary. During the game initiation process, an initiation screen is displayed on LCD 201. Once the game is started, CPU 211 checks the status of the input signal from Input Device 210 (Fig. 1) or by the voice recognition system. If an input signal is detected (S2), a response to such input signal is processed by CPU 211 by

retrieving data from Game Process Data Storage Area 2061g (Fig. 141) (S3). For example, if the input signal instructs to move forward the three-dimensional object, CPU 211 calculates the next action of its body parts (e.g., pushing forward its right leg) by retrieving data from Game Process Data Storage Area 2061g . CPU 211 also processes with the three-dimensional objects which are irrelevant to the input signal input from Input Device 210 by retrieving data from Game Process Data Storage Area 2061g, for example the background objects displayed on LCD 201 including, clouds, pedestrians, buildings, traffic lights, and bridges (S4). CPU 211 also calculates the three-dimensional data of each three-dimensional object and the three-dimensional data of all parts thereof in the three-dimensional game space by retrieving data from three-dimensional object Data Storage Area 2061e (S4). CPU 211 then retrieves the designated textures from Texture Data Storage Area 2061f (Fig. 141) and 'pastes' them to the three-dimensional objects (S4). The three-dimensional objects with textures 'pasted' are displayed on LCD 201 (S5). The sequence of S2 through S5 is repeated until the game is over (S6), and the game termination process, i.e., a process to terminate the game mode

is initiated thereafter (S7).

[2110] Figs. 143 and 144 illustrate the process to allocate Input Device 210 (Fig. 1) to perform the game function. As described in Fig. 143, when the game initiation process is initiated as explained in S1 of Fig. 142, the key allocation process is initiated simultaneously. As the result of the key allocation process, Input Device 210 normally utilized for communication purposes, including keypad and buttons, is allocated as input means for performing the game function. In the example described in Fig. 144, Key #1 is assigned for instructing CPU 211 to move up the three-dimensional object, Key #2 is assigned for instructing CPU 211 to move down the three-dimensional object, Key #3 is assigned for instructing CPU 211 to move left the three-dimensional object, Key #4 is assigned for instructing CPU 211 to move right the three-dimensional object, Key #5 is assigned for instructing CPU 211 to make the three-dimensional object to jump, and Key #6 is assigned for instructing CPU 211 to make the three-dimensional object to dash, and all the foregoing data are stored in Key Allocation Data Storage Area 2061h.

[2111] *<<3D Video Game Function -- Summary>>*

[2112] The foregoing invention may be summarized as the fol-

lowing.

[2113] A wireless communication device comprising an input means to operate said wireless communication device, a microphone to input audio data to said wireless communication device, a speaker to output audio data from said wireless communication device, a video image generator to generate a plurality of images, and a display to display said plurality of images, wherein said video image generator functions under a first mode and a second mode, said video image generator processes a plurality of two-dimensional images and said plurality of two-dimensional images are displayed on said display under said first mode, and said video image generator processes a plurality of three-dimensional images and said plurality of three-dimensional images are displayed on said display under said second mode.

[2114] *<<Digital Mirror Function (2)>>*

[2115] Figs. 145 through 155 illustrate the second embodiment of digital mirror function of Communication Device 200 (Fig. 1).

[2116] Fig. 145 illustrates the sequence to initiate the present function. First of all, a list of modes is displayed on LCD 201 (Fig. 1) (S1). When an input signal is input by utilizing

Input Device 210 (Fig. 1) or via voice recognition system to select a specific mode (S2), the selected mode is activated. In the present example, the communication mode is activated (S3a) when the communication mode is selected in the previous step, the game download mode and the game play mode are activated (S3b) when the game download mode and the game play mode are selected in the previous step of which the details are described in Fig. 137, and the CCD mode is activated (S3c) when the CCD mode is selected in the previous step. The modes displayed on LCD 201 in S1 which are selectable in S2 and S3 may include all functions and modes explained in this specification. Once the selected mode is activated, another mode can be activated while the first activated mode is still implemented by going through the steps of S1 through S3 for another mode, thereby enabling a plurality of functions and modes being performed simultaneously (S4).

[2117] Fig. 146 illustrates the data stored in RAM 206 (Fig. 1). As described in Fig. 146, the data to activate (as described in S3a of the previous figure) and to perform the communication mode is stored in Communication Data Storage Area 2061a, the data to activate (as described in S3b of

the previous figure) and to perform the game download mode and the game play mode are stored in Game DL/ Play Data Storage Area 2061b/2061c of which the details are described in Fig. 138, and the data to activate (as described in S3c of the previous figure) and to perform the CCD mode is stored in 2062a.

[2118] Fig. 147 illustrates the data stored in CCD Data Storage Area 2062a (Fig. 146). CCD Data Storage Area 2062a includes two areas, i.e., CCD Software Storage Area 2062b and CCD Video Data Storage Area 2062c. CCD Software Storage Area 2062b stores a software program which implements the digital mirror function, and CCD Video Data Storage Area 2062c stores a series of video data input from CCD Unit 214 (Fig. 1) in a digital format for purposes of being displayed on LCD 201 (Fig. 1) and/or being sent to another Communication Device 200 via Antenna 218 (Fig. 1) in a wireless fashion.

[2119] As described in Fig. 148, CCD Video Data Storage Area 2062c includes two areas, i.e., 1st Video Data Storage Area 2062d and 2nd Video Data Storage Area 2062e of which the function of each area is described in details hereinafter. The series of video data stored in both areas are similar to each other.

[2120] Fig. 149 illustrates the method of activating and deactivating the CCD mode by utilizing the voice recognition system explained hereinbefore. The voice recognition system is turned on, in the first place (S1), and the CCD mode is activated by utilizing the voice recognition system (S2). When utilizing the CCD mode is over, it is deactivated by utilizing the voice recognition system, and the system is turned off thereafter (S3).

[2121] Figs. 150 through 153 illustrate the utilization of the two areas of CCD Video Data Storage Area 2062c (Fig. 148), i.e., 1st Video Data Storage Area 2062d and 2nd Video Data Storage Area 2062e. As described in Fig. 150, video data is input from CCD Unit 214 (Fig. 1) (S1), and is stored in 1st Video Data Storage Area 2062d (S2). While the sequence described in Fig. 150 is performed, the video data already stored in 2nd Video Data Storage Area 2062e is read (S1), and is displayed on LCD 201 (Fig. 1) as described in Fig. 151. Once reading the video data from 2nd Video Data Storage Area 2062e is completed, a new video data is input from CCD Unit 214 (S1) and is stored in 2nd Video Data Storage Area 2062e (S2) as described in Fig. 152. While the sequence described in Fig. 152 is performed, the video data already stored in 1st Video Data

Storage Area 2062d is read (S1), and is displayed on LCD 201 (Fig. 1) as described in Fig. 153. The foregoing sequence is administered by CPU 211 (Fig. 1) under the instruction written in the software program stored in CCD Software Storage Area 2062b (Fig. 147).

[2122] Fig. 154 is a summary of the sequence of writing and reading video data to and from 1st Video Data Storage Area 2062d and 2nd Video Data Storage Area 2062e, respectively. When 1st Video Data Storage Area 2062d is utilized for writing a new video data, 2nd Video Data Storage Area 2062e is utilized for reading the video data already stored therein. Once reading video data from 2nd Video Data Storage Area 2062e is completed, it is then utilized for writing a new video data, and 1st Video Data Storage Area 2062d is utilized for reading the video data already stored therein. In other words, 1st Video Data Storage Area 2062d repeats the sequence of writing and reading video data whereas 2nd Video Data Storage Area 2062e repeats the sequence of reading and writing until the present function ceases to be utilized. Namely, 1st Video Data Storage Area 2062d is always in a writing mode when 2nd Video Data Storage Area 2062e is in a reading mode, and 2nd Video Data Storage Area 2062e is

always in a writing mode when 1st Video Data Storage Area 2062d is in a reading mode.

[2123] Fig. 155 illustrates the sequence of implementing the digital mirror function. As described in Fig. 155, CPU 211 (Fig. 1) checks the angle of Rotator 291 (Fig. 44c) (S1). If the angle of Rotator 291 is within the range of x degree and y degree, i.e., when CCD Unit 214 (Fig. 44c) is facing the opposite direction from LCD 201 (Fig. 1) (S2), the video data stored in 1st Video Data Storage Area 2062d (Fig. 148) and 2nd Video Data Storage Area 2062e (Fig. 148) are read from left to right, i.e., in the manner described in Fig. 44d (S3a). On the other hand, if the angle of Rotator 291 is not within the range of x degree and y degree, i.e., when CCD Unit 214 is facing approximately the same direction with LCD 201 or facing the user of Communication Device 200 (S2), the video data stored in 1st Video Data Storage Area 2062d and 2nd Video Data Storage Area 2062e are read from right to left, i.e., in the manner described in Fig. 44e, which produces a 'mirror image' on LCD 201 (S3b). Even though a 'mirror image' is produced on LCD 201, the video data which is sent to another Communication Device 200 via Antenna 218 (Fig. 1) in a wireless fashion is not inverted and is always read

from left to right as described in Fig. 44d. Not to mention, the video data transmitted to another communication device may send a series of inverted video data by utilizing the method described in Fig. 44e.

[2124] *<<Voice Recognition Sys-- E-mail (2)>>*

[2125] Figs. 156 through 160 illustrate the second embodiment of typing and sending e-mails by utilizing the voice recognition system.

[2126] Fig. 156 illustrates the sequence to initiate the present function. First of all, a list of modes is displayed on LCD 201 (Fig. 1) (S1). When an input signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system to select a specific mode (S2), the selected mode is activated. In the present example, the communication mode is activated (S3a) when the communication mode is selected in the previous step, the game download mode and the game play mode are activated (S3b) when the game download mode and the game play mode are selected in the previous step of which the details are described in Fig. 137, and the e-mail producing mode is activated (S3c) when the e-mail producing mode is selected in the previous step. The modes displayed on LCD 201 in S1 which are selectable in S2 and S3 may include all functions and

modes explained in this specification. Once the selected mode is activated, another mode can be activated while the first activated mode is still implemented by going through the steps of S1 through S3 for another mode, thereby enabling a plurality of functions and modes being performed simultaneously (S4).

[2127] Fig. 157 illustrates the data stored in RAM 206 (Fig. 1). As described in Fig. 157, the data to activate (as described in S3a of the previous figure) and to perform the communication mode is stored in Communication Data Storage Area 2061a, the data to activate (as described in S3b of the previous figure) and to perform the game download mode and the game play mode are stored in Game DL/Play Data Storage Area 2061b/2061c of which the details are described in Fig. 138, and the data to activate (as described in S3c of the previous figure) and to perform the e-mail producing mode is stored in E-mail Data Storage Area 2063a.

[2128] Fig. 157a illustrates the data stored in E-mail Data Storage Area 2063a. E-mail Data Storage Area 2063a includes E-mail Software Storage Area 2063b and E-mail Producing Data Storage Area 2063c. E-mail Software Storage Area 2063b stores software program to implement the e-mail

producing mode, and E-mail Producing Data Storage Area 2063c stores a plurality of data regarding email, both of which are explained in details hereinafter.

[2129] Fig. 158 illustrates the method of activating and deactivating the e-mail producing mode by utilizing the voice recognition system explained hereinbefore. The voice recognition system is turned on, in the first place (S1), and the e-mail producing mode is activated by utilizing the voice recognition system (S2). When utilizing the e-mail producing mode is over, it is deactivated by utilizing the voice recognition system, and the system is turned off thereafter (S3).

[2130] Fig. 159 illustrates the sequence of the e-mail producing mode explained in Fig. 158. First of all, CPU 211 (Fig. 1), by operation of the software program stored in E-mail Software Storage Area 2063b (Fig. 157a), displays on LCD 201 (Fig. 1) the items which the user of Communication Device 200 should fill in (S1). Here, the items displayed in the present example are the receiver's e-mail address, CC (carbon copy), subject of the e-mail, and the main body text of the e-mail. Next, one of these items is selected by the voice recognition system (S2). If the receiver's e-mail address is selected in the previous step, the user of Com-

munication Device 200 inputs the receiver's e-mail address by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S3a). If CC (carbon copy) is selected in the previous step, the user of Communication Device 200 inputs an e-mail address to which the e-mail is sent other than the receiver's e-mail address by utilizing the voice recognition system (S3b). If the subject of the e-mail is selected in the previous step, the user of Communication Device 200 inputs the subject of the e-mail by utilizing the voice recognition system (S3c). If the main body text of the e-mail is selected in the previous step, the user of Communication Device 200 inputs the main body text of the e-mail by utilizing the voice recognition system (S3d). The user of Communication Device 200 can fill in a portion of one item and go to another item, and come back to the previous one to finish filling out the item (S4). All the input data are stored in E-mail Producing Data Storage Area 2063c (Fig. 157a).

[2131] Fig. 160 illustrates the sequence of inputting alphanumeric information to each item explained in Fig. 159. First of all, analog audio data is input via Microphone 215 (Fig. 1) (S1). Analog audio data is converted into digital audio data by A/D 213 (Fig. 1) (S2). The digital audio data is

processed by Sound Processor 205 (Fig. 1) to convert the digital audio data in a CPU readable form (S3). Then CPU 211 (Fig. 1) retrieves alphanumeric information therefrom (S4), which is displayed on LCD 201 (Fig. 1) and emitted as sound data from Speaker 216 (Fig. 1) (S5). If the retrieved alphanumeric information is not correct (S6), the user can input the correct alphanumeric information manually by utilizing Input Device 210 (Fig. 1), such as a keypad or a dial pad, and the corrected alphanumeric information is displayed on LCD 201 and emitted as sound data from Speaker 216 (S7). The sequence of S1 through S7 is repeated until termination signal by utilizing the voice recognition system is input via Microphone 215 (S8).

[2132] The method of sending the produced e-mail is same as the one already explained in Fig. 17a and Fig. 17b.

[2133] *<<Positioning System -- GPS Search Engine>>*

[2134] Figs. 161 through 169b illustrate the GPS search engine function, i.e., the method to search a location by a specific criteria and display such location on a map and a direction thereto on LCD 201 (Fig. 1).

[2135] Fig. 161 illustrates the data stored in Host H. As described in Fig. 161, Host H includes Search Engine Storage Area Hb, Location Identifier Storage Area Hc, and Database

Storage Area Hd. Here, the software program stored in Search Engine Storage Area Hb is a searching software program to search Database Storage Area Hd with a specific criteria, a data base stored in Database Storage Area Hd is a database which stores a plurality of data and information as described in Fig. 166, and the software program stored in Location Identifier Storage Area Hc is a software program to identify the geographical location of the specific sites, Communication Device 200 and other objects.

[2136] Fig. 162 illustrates the sequence to initiate the present function. First of all, a list of modes is displayed on LCD 201 (Fig. 1) (S1). When an input signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system to select a specific mode (S2), the selected mode is activated. In the present example, the communication mode is activated (S3a) when the communication mode is selected in the previous step, the game download mode and the game play mode are activated (S3b) when the game download mode and the game play mode are selected in the previous step of which the details are described in Fig. 137, and the search mode is activated (S3c) when the search mode is selected in the previous step. The modes

displayed on LCD 201 in S1 which are selectable in S2 and S3 may include all functions and modes explained in this specification. Once the selected mode is activated, another mode can be activated while the first activated mode is still implemented by going through the steps of S1 through S3 for another mode, thereby enabling a plurality of functions and modes being performed simultaneously (S4).

[2137] Fig. 163 illustrates the data stored in RAM 206 (Fig. 1). As described in Fig. 163, the data to activate (as described in S3a of the previous figure) and to perform the communication mode is stored in Communication Data Storage Area 2061a, the data to activate (as described in S3b of the previous figure) and to perform the game download mode and the game play mode are stored in Game DL/ Play Data Storage Area 2061b/2061c of which the details are described in Fig. 138, and the data to activate (as described in S3c of the previous figure) and to perform the search mode is stored in Search Data Storage Area 2064a.

[2138] Fig. 164 illustrates the method to store the wireless data to the relevant storage area in RAM 206 (Fig. 1). A wireless signal is received via Antenna 218 (Fig. 1) (S1). The received wireless signal is decompressed and converted

into a CPU readable format by Signal Processor 208 (Fig. 1), and CPU 211 (Fig. 1) reads the header or the title of the data to identify its data-type in order to determine the location at which the data is stored (S2). According to the identified data-type, communication data is stored in Communication Storage Area 2061a (S3a), game DL data and game play data area stored in Game DL/Play Data Storage Area 2061b/2061c (S3b), and search data is stored in Search Data Storage Area 2064a (S3c). The sequence of S1 through S3 is repeated endlessly in order to enable to receive and store multiple types of data simultaneously. For example, the first portion of search data is processed as described in S3c while the first portion of communication data is processed as described in S3a, and the second portion of search data is processed as described in S3c while the first portion of game DL data is processed as described in S3b. The wireless signal received via Antenna 218 may be in TDMA format, FDMA format, and/or CDMA format.

[2139] Fig. 165 illustrates the data stored in Search Data Storage Area 2064a (Fig. 163). Search Data Storage Area 2064a includes Search Software Storage Area 2064b and Search Information Storage Area 2064c. Search Software Storage

Area 2064b stores a software program to operate Communication Device 200 in order to implement the search described herein the details of which is explained in Figs. 168a through 169b. Search Information Storage Area 2064c stores the data received by the process explained in S3c of Fig 164 such as, search results, communication log with Host H (Fig. 161), and all necessary information to perform the software program stored in Search Software Storage Area 2064b.

[2140] Fig. 166 illustrates the data stored in Database Storage Area Hd (Fig. 161). Database Storage Area Hd is primarily composed of five categories, i.e., type, keyword, telephone number, geographical location, and attribution information. In the present example explained in Fig. 166, the category 'Type' represents the type of the site and Stores St1 and St2, Restaurants Rt1 and Rt2, Theaters Th1 and Th2, Lodges Lg1 and Lg2, Railway Stations Rst1, Rst2, Rst3, and Rst4, and Gas Stations Gst1 and Gst2 are registered under the category 'Type'. One or more of keywords which represent the character of the site is allocated to each site under the category 'Keyword'. The corresponding telephone number of each site is stored under the category 'Tel'. The location of each site is stored in [x, y, z]

format under the category 'Loc'. The attribution information of each site is stored under the category 'Att. Info'. Here, the attribution information of Stores St1 and St2 are the names of the goods sold and the prices thereof, the date of bargain, and the business hours. The attribution information of Restaurants Rt1 and Rt2 are the price of meal provided, and the business hours. The attribution information of theater Th1 and Th2 are the title of movie shown, the business hours, and the price of tickets sold. The attribution information of Lodges Lg1 and Lg2 are the lodging fee, the types of rooms and beds provided, and the cancellation policy. The attribution information of Railway Stations Rst1, Rst2, Rst3, and Rst4 are the time schedule of each train, and ticket price for each destination. The attribution information of Gas Stations Gst1 and Gst2 are the gas price per gallon and the retail hours. The example illustrated in Fig. 166 is a simplified model of this function in order to avoid complexity in its explanation, therefore, the preferable amount of sites registered in Database Storage Area Hd is more than few thousand to retrieve a satisfying result to the user of Communication Device 200. Database Hd also includes 3D Map Storage Area Hd1 to store a plurality of three-dimensional map

data of all geographic locations which is designed to be displayed on LCD 201 (Fig. 1) of Communication Device 200. As another embodiment, the data stored in Database Storage Area Hd can be stored in Search Information Storage Area 2064c (Fig. 165) of Communication Device 200 instead.

[2141] Fig. 167 illustrates the method of activating and deactivating the search mode by utilizing the voice recognition system explained hereinbefore. The voice recognition system is turned on, in the first place (S1), and the search mode is activated by utilizing the voice recognition system (S2). When utilizing search mode is over, it is deactivated by utilizing the voice recognition system, and the system is turned off thereafter (S3).

[2142] Fig. 167a illustrates the software program stored in Search Software Storage Area 2064b (Fig. 165) of Communication Device 200. As described in Fig. 167a, a list of five categories, i.e., type, keyword, telephone number, geographical location, and attribution information is displayed on LCD 201 (Fig. 1) (S1). The user of Communication Device 200 selects one of the categories for searching purposes by utilizing the voice recognition system (S2).

[2143] Fig. 168a illustrates the software program stored in Search Software Storage Area 2064b (Fig. 165) of Communication Device 200 and the software program stored in Location Identifier Storage Area Hc (Fig. 161) and Search Engine Storage Area Hb (Fig. 161) of Host H (Fig. 161) when, as an example, 'keyword' is selected from the categories displayed on LCD 201 (Fig. 1) as described in Fig. 167a. Once the voice recognition system is activated by the process described in Fig. 167, a prompt screen (not shown) is displayed on LCD 201 and keyword is input via Microphone 215 (Fig. 1) (S1). The keyword data is sent to Host H via Antenna 218 (Fig. 1) in a wireless fashion, and the software program stored in Search Engine Storage Area Hb scans the 'Keyword' category and collects the result, i.e., a bundle of proposed sites (S2). The collected result is sent from Host H to Communication Device 200 in a wireless fashion and is displayed on LCD 201 (S3). The user of Communication Device 200, by utilizing the voice recognition system, selects one of the proposed sites as his/her destination (S4). CPU 211 (Fig. 1), under the instruction written in Search Software Storage Area 2064b, calculates the current position of Communication Device 200 (S5). The data retrieved in S4 and S5 are sent

to Host H in a wireless fashion and the software program stored in Location Identifier Storage Area Hc calculates the distance and the shortest route from the current position of Communication Device 200 to the selected site (i.e., destination) and retrieves a relevant 3D map from 3D Map Storage Area Hd1 (Fig. 166) (S6). Communication Device 200 receives these data from Host H, and LCD 201 displays the current position and the selected site (i.e., destination) and the shortest route thereto on a 3D map, and the distance from the current position to the selected item (i.e., destination) in digits (S7).

[2144] Fig. 168b illustrates an embodiment of the software program stored in Search Software Storage Area 2064b (Fig. 165) of Communication Device 200 without relying to Host H (Fig. 161). In this embodiment, the data stored in Database Hd (Fig. 166) of Host H is also stored in Search Information Storage Area 2064c (Fig. 165) of Communication Device 200. Once the voice recognition system is activated by the process described in Fig. 167, a prompt screen (not shown) is displayed on LCD 201 (Fig. 1) and keyword is input via Microphone 215 (Fig. 1) (S1). The software program stored in Search Software Storage Area 2064b (Fig. 165) scans the 'Keyword' category of the

database stored in Search Information Storage Area 2064c and collects the result, i.e., a bundle of proposed sites (S2). The collected result is displayed on LCD 201 (S3). The user of Communication Device 200, by utilizing the voice recognition system, selects one of the proposed sites as his/her destination (S4). CPU 211 (Fig. 1), under the instruction written in Search Software Storage Area 2064b, calculates the current position of Communication Device 200 (S5). The software program stored in Search Software Storage Area 2064b calculates the distance and the shortest route from the current position of Communication Device 200 to the selected site (i.e., destination) and retrieves a relevant 3D map from Search Information Storage Area 2064c (S6). LCD 201 displays the current position and the selected site (i.e., destination) and the shortest route thereto on a 3D map, and the distance from the current position to the selected item (i.e., destination) in digits (S7).

[2145] Fig. 169a illustrates another embodiment similar to the one explained in Fig. 168a which utilizes the software program stored in Search Software Storage Area 2064b (Fig. 165) of Communication Device 200 and the software program stored in Location Identifier Storage Area Hc (Fig.

161) and Search Engine Storage Area Hb (Fig. 161) of Host H (Fig. 161). Once the voice recognition system is activated by the process described in Fig. 167, a prompt screen (not shown) is displayed on LCD 201 (Fig. 1) and keyword is input via Microphone 215 (Fig. 1) (S1). The keyword data is sent to Host H via Antenna 218 (Fig. 1) in a wireless fashion, and the software program stored in Search Engine Storage Area Hb scans the 'Keyword' category and collects the result, i.e., a bundle of proposed sites (S2). CPU 211 (Fig. 1), under the instruction written in Search Software Storage Area 2064b, calculates the current position of Communication Device 200 (S3). The data retrieved in S2 and S3 are sent to Host H in a wireless fashion and the software program stored in Location Identifier Storage Area Hc calculates the distance and the shortest route from the current position of Communication Device 200 to the proposed sites and retrieves a relevant 3D map from 3D Map Storage Area Hd1 (Fig. 166) (S4). Communication Device 200 receives these data from Host H, and LCD 201 displays the current position and the positions of the proposed sites and the shortest route thereto on a 3D map, and the distance from the current position to the selected items (i.e., destinations) in digits

(S5). The user of Communication Device 200, by utilizing the voice recognition system, selects one of the proposed sites as the destination (S6). LCD 201 displays the current position and the selected site (i.e., destination) and the shortest route thereto on a 3D map, and the distance from the current position to the final destination (i.e., destinations) in digits (S7).

[2146] Fig. 169b illustrates another embodiment of the software program stored in Search Software Storage Area 2064b (Fig. 165) of Communication Device 200 without relying to Host H (Fig. 161). Once the voice recognition system is activated by the process described in Fig. 167, a prompt screen (not shown) is displayed on LCD 201 (Fig. 1) and keyword is input via Microphone 215 (Fig. 1) (S1). The software program stored in Search Software Storage Area 2064b scans the 'Keyword' category and collects the result, i.e., a bundle of proposed sites (S2). CPU 211 (Fig. 1), under the instruction written in Search Software Storage Area 2064b, calculates the current position of Communication Device 200 (S3). The software program stored in Search Software Storage Area 2064b calculates the distance and the shortest route from the current position of Communication Device 200 to the proposed sites and re-

trieves a relevant 3D map from Search Information Storage Area 2064c (Fig. 165) (S4). LCD 201 displays the current position and the positions of the proposed sites and the shortest route thereto on a 3D map, and the distance from the current position to the selected items (i.e., destinations) in digits (S5). The user of Communication Device 200, by utilizing the voice recognition system, selects one of the proposed sites as the destination (S6). LCD 201 displays the current position and the selected site (i.e., destination) and the shortest route thereto on a 3D map, and the distance from the current position to the selected site (i.e., destinations) in digits (S7).

[2147] The sequences illustrated in Figs. 168a through 169b which describe the database search utilizing keywords can be applied to other types of database search. For example, search by 'Type' will collect all sites pertaining to a certain type (e.g., theater), and search by 'Location' will collect all sites pertaining to a certain geographical area. Search by 'Telephone Number' will collect all sites having a certain phone number (there is only one hit in most cases unless a wild card is utilized), and search by 'Area Code' will collect all sites having a certain area code. These examples can be implemented by rewriting S1 of

Figs. 168a through 169b to 'Input Type', 'Input Location', 'Input Telephone Number', or 'Input Area Code'.

[2148] As another embodiment, more than one search terms can be utilized simultaneously, such as 'Input Type and Location' (which collects all sites pertaining to a certain type and to a certain geographical area) and 'Input Area Code and Type' (which collects all sites having a certain area code and pertains to a certain type of site). Theses examples can be implemented by rewriting S1 of Figs. 168a through 169b to 'Input Type and Location' and 'Input Area Code and Type'.

[2149] Figs. 169c and 169d illustrate the steps to find an appropriate gas station while the user of Communication Device 200 is driving an automobile.

[2150] Fig. 169c illustrates the steps to find an appropriate gas station by utilizing the software program stored in Search Software Storage Area 2064b (Fig. 165) of Communication Device 200 and the software program stored in Location Identifier Storage Area Hc (Fig. 161) and Search Engine Storage Area Hb (Fig. 161) of Host H (Fig. 161). Once the voice recognition system is activated by the process described in Fig. 167, a prompt screen (not shown) is displayed on LCD 201 (Fig. 1) and the 'type' (here, 'gas sta-

tion') is input or selected via Microphone 215 (Fig. 1) (S1). Next, the user of Communication Device 200 selects the scope of search from (a) nearest gas station, (b) cheapest gas station, (c) gas station within 1 mile, and (d) gas station within 5 miles, all of which are displayed on LCD 201 (S2). The selected data is sent to Host H via Antenna 218 (Fig. 1) in a wireless fashion, and the software program stored in Location Identifier Storage Area Hc calculates the current position of Communication Device 200 (S3). The software program stored in Search Engine Storage Area Hb renders a search and collects the result, i.e., a bundle of proposed gas stations (S4). For example, if (a) nearest gas station is selected in S2, the software program stored in Search Engine Storage Area Hb collects the five nearest gas stations from the current position by examining the geographic location data of each gas station stored in Database Hd. If (b) cheapest gas station is selected in S2, the software program stored in Search Engine Storage Area Hb collects all gas stations within 5 mile radius from the current position by examining the geographic location of each gas station stored in Database Hd, and selects the five cheapest gas stations therefrom by examining the attribution information (i.e., gas price per gallon) of each

gas station stored in Database Hd. If (c) gas station within 1 mile is selected in S2, the software program stored in Search Engine Storage Area Hb collects all gas stations within 1 mile radius from the current position by examining the geographic location of each gas station stored in Database Hd. If (d) gas station within 5 miles is selected in S2, the software program stored in Search Engine Storage Area Hb collects all gas stations within 5 mile radius from the current position by examining the geographic location of each gas station stored in Database Hd. Communication Device 200 receives these data from Host H, and LCD 201 displays the current position and the positions of the proposed sites and the shortest route thereto on a 3D map, and the distance from the current position to the selected items (i.e., destinations) in digits (S5). The user of Communication Device 200, by utilizing the voice recognition system, selects one of the proposed sites as the destination (S6). LCD 201 displays the current position and the selected site (i.e., destination) and the shortest route thereto on a 3D map, and the distance from the current position to the final destination (i.e., destinations) in digits (S7).

[2151] Fig. 169d illustrates the steps to find an appropriate gas

station by utilizing the software program stored in Search Software Storage Area 2064b (Fig. 165) of Communication Device 200 without relying to Host H (Fig. 161). Once the voice recognition system is activated by the process described in Fig. 167, a prompt screen (not shown) is displayed on LCD 201 (Fig. 1) and the 'type' (here, 'gas station') is input or selected via Microphone 215 (Fig. 1) (S1). Next, the user of Communication Device 200 selects the scope of search from (a) nearest gas station, (b) cheapest gas station, (c) gas station within 1 mile, and (d) gas station within 5 miles, all of which are displayed on LCD 201 (S2). CPU 211 (Fig. 1), under the instruction written in Search Software Storage Area 2064b, calculates the current position of Communication Device 200 (S3). CPU 211 renders a search and collects the result, i.e., a bundle of proposed gas stations (S4). For example, if (a) nearest gas station is selected in S2, the software program stored in Search Engine Storage Area Hb collects the five nearest gas stations from the current position by examining the geographic location data of each gas station stored in Database Hd. If (b) cheapest gas station is selected in S2, the software program stored in Search Engine Storage Area Hb collects all gas stations within 5 mile radius from

the current position by examining the geographic location of each gas station stored in Database Hd, and selects the five cheapest gas stations therefrom by examining the attribution information (i.e., gas price per gallon) of each gas station stored in Database Hd. If (c) gas station within 1 mile is selected in S2, the software program stored in Search Engine Storage Area Hb collects all gas stations within 1 mile radius from the current position by examining the geographic location of each gas station stored in Database Hd. If (d) gas station within 5 miles is selected in S2, the software program stored in Search Engine Storage Area Hb collects all gas stations within 5 mile radius from the current position by examining the geographic location of each gas station stored in Database Hd. LCD 201 displays the current position and the positions of the proposed sites and the shortest route thereto on a 3D map, and the distance from the current position to the selected items (i.e., destinations) in digits (S5). The user of Communication Device 200, by utilizing the voice recognition system, selects one of the proposed sites as the destination (S6). LCD 201 displays the current position and the selected site (i.e., destination) and the shortest route thereto on a 3D map, and the distance from the current

position to the final destination (i.e., destinations) in digits (S7).

[2152] *<<Positioning System -- Automobile Pinpointing System>>*

[2153] Figs. 170 through 179 illustrate the automobile pinpointing system, i.e., a system to pin-point the geographical location of an automobile with Communication Device 200 by utilizing the positioning system (GPS) installed therein. The concept of positioning system which has already been explained hereinbefore is also applicable to the present system.

[2154] As described in Fig. 170, GPS Navigation System 835a is installed in Automobile 835. Here, GPS Navigation System 835a is capable of receiving GPS signals which is sent from artificial satellites or from their equivalents (e.g., Relays R1 through R20 in Figs. 20a and 20b) for purposes of identifying the geographical location of Automobile 835. GPS Navigation System 835a is capable of transmitting (i.e., forwarding) the GPS signals received from the artificial satellites (or from their equivalents) to Host H (not shown) in order for Host H to calculate the current position of Automobile 835. GPS Navigation System 835a is also capable of calculating the current position of Automobile 835 by utilizing the information included in the

GPS signals and capable of transmitting its location data in a wireless fashion.

[2155] Fig. 171 illustrates the software program installed in Communication Device 200 to initiate the present function. First of all, a list of modes is displayed on LCD 201 (Fig. 1) (S1). When an input signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system to select a specific mode (S2), the selected mode is activated. In the present example, the communication mode is activated (S3a) when the communication mode is selected in the previous step, the game download mode and the game play mode are activated (S3b) when the game download mode and the game play mode are selected in the previous step of which the details are described in Fig. 137, and the automobile find mode is activated (S3c) when the automobile find mode is selected in the previous step. The modes displayed on LCD 201 in S1 which are selectable in S2 and S3 may include all functions and modes explained in this specification. Once the selected mode is activated, another mode can be activated while the first activated mode is still implemented by going through the steps of S1 through S3 for another mode, thereby enabling a plurality of functions and modes being

performed simultaneously (S4).

[2156] Fig. 172 illustrates the data stored in RAM 206 (Fig. 1). As described in Fig. 172, the data to activate (as described in S3a of the previous figure) and to perform the communication mode is stored in Communication Data Storage Area 2061a, the data to activate (as described in S3b of the previous figure) and to perform the game download mode and the game play mode are stored in Game DL/Play Data Storage Area 2061b/2061c of which the details are described in Fig. 138, and the data to activate (as described in S3c of the previous figure) and to perform the automobile find mode is stored in Automobile Find Data Storage Area 2065a.

[2157] Fig. 173 illustrates the method to store the wireless data to the relevant storage area in RAM 206 (Fig. 1). A wireless signal is received via Antenna 218 (Fig. 1) (S1). The received wireless signal is decompressed and converted into a CPU readable format by Signal Processor 208 (Fig. 1), and CPU 211 (Fig. 1) reads the header or the title of the data to identify its data-type in order to determine the location at which the data is stored (S2). According to the identified data-type, communication data is stored in Communication Storage Area 2061a (S3a), game DL data

and game play data area stored in Game DL/Play Data Storage Area 2061b/2061c (S3b), and automobile find data is stored in Search Data Storage Area 2065a (S3c). The sequence of S1 through S3 is repeated endlessly in order to enable to receive and store multiple types of data simultaneously. For example, the first portion of automobile find data is processed as described in S3c while the first portion of communication data is processed as described in S3a, and the second portion of automobile find data is processed as described in S3c while the first portion of game DL data is processed as described in S3b. The wireless signal received via Antenna 218 may be in TDMA format, FDMA format, and/or CDMA format.

[2158] Figs. 174 through179 illustrate the method to identify the current position of Automobile 835 (Fig. 170) by Communication Device 200, which is located somewhere in the matrix of relays illustrated in Fig. 20b. Here, the matrix of relays illustrated in Fig. 20b is equivalent to GPS artificial satellite. Assuming that Communication Device 200 seeks to detect the current position of Automobile 835.

[2159] As described in Fig. 174, first of all an automobile ID of Automobile 835 (Fig. 170) is entered by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). As

another embodiment, a list of automobile IDs may be listed on LCD 201 (Fig. 1), and the user of Communication Device 200 may select one by utilizing Input Device 210 or via voice recognition system instead. The automobile ID may be Automobiles 835 corresponding phone number or the license number allocated thereto. A request data including the automobile ID is sent to Host H (not shown) from Communication Device 200 (S2).

[2160] As illustrated in Fig. 175, Host H (not shown) periodically receives data from Communication Device 200 (S1). If the received data is a request data (S2), Host H first of all searches its communication log which records the location of Automobile 835 (Fig. 170) when it last communicated with Host H (S3). Then Host H sends a search signal from the relays described in Fig. 20b which are located within 100 meter radius from the location registered in the communication log. If there is no response from Automobile 835 (S5), Host H sends search signal from all relays (e.g., from R1 to R20 in Fig. 20b) to search for Automobile 835 (Fig. 170) (S6).

[2161] As illustrated in Fig. 176, Automobile 835 (Fig. 170) periodically receives data from Host H (not shown) (S1). If the data received is a search signal (S2), Automobile 835

sends a response signal to Host H (S3).

[2162] As illustrated in Fig. 177, Host H (not shown) periodically receives data from Automobile 835 (Fig. 170) (S1). If the data received is a response signal (S2), Host H locates the geographic location of Automobile 835 by utilizing the method described in Fig. 20a and Fig. 20b (S3), and sends the location data and the relevant 3D map data of the area where Automobile 835 is located to Communication Device 200 (S4).

[2163] As illustrated in Fig. 178, Communication Device 200 periodically receives data from Host H (not shown) (S1). If the data received is the location data and the relevant 3D map data mentioned above, Communication Device 200 displays the 3D map based on the relevant 3D map data and indicates the current location of Automobile 835 (Fig. 170) thereon based on the location data received (S3).

[2164] Communication Device 200 can continuously track down the current location of Automobile 835 (Fig. 170) as illustrated in Fig. 179. First, Communication Device 200 sends a request data to Host H (not shown) (S1). As soon as Host H receives the request data (S2), it sends a search signal in the manner illustrated in Fig. 175 (S3). As soon as Automobile 835 receives the search signal (S4), it sends a

response signal to Host H (S5). Based on the response signal, Host H locates Automobile 835 with the method described in Figs. 20a and 20b (S6). Then Host H sends to Communication Device 200 a renewed location data and a relevant 3D map data of the area where Automobile 835 is currently located (S7). As soon as these data are received (S8), Communication Device 200 displays the 3D map based on the relevant 3D map data and indicates the updated location based on the renewed location data (S9). If Automobile 835 is still within the specified area, Communication Device 200 may utilize the original relevant 3D map data. As another embodiment of the present invention, S1 through S4 may be omitted and make Automobile 835 send a response signal continuously to Host H until Host H sends a command signal to Automobile 835 to cease sending the response signal.

[2165] *<<Positioning System -- Honk/Light Generating System>>*

[2166] Figs. 180 through 182 illustrate the honk/light generating system by utilizing Communication Device 200. Here, Automobile 835 in which honk/light generating system is installed is capable to honk and/or emit light by operation of Communication Device 200.

[2167] Fig. 180 illustrates Automobile 835 in which honk/light

generating system is installed. As described in Fig. 180, Automobile 835 includes Automobile CPU 835e, Automobile Wireless Communicator 835d, Automobile RAM 835f, and Honk/Light Generator 835g. Here, Automobile CPU 835e implements the honk/light generating system by running the software program stored in Automobile RAM 835f. Automobile Wireless Communicator 835d is capable of sending and receiving wireless signal in order to communicate with Communication Device 200 in a wireless fashion. Automobile RAM 835f stores the software program necessary to implement the honk/light generating system. Honk/Light Generator 835g is capable to honk and/or emit light under the control of Automobile CPU 835e.

[2168] As illustrated in Fig. 181, Automobile RAM 835f (Fig. 180) stores Honk/Light Generating Software Storage Area 835c of which the details are explained hereinafter.

[2169] Fig. 181a illustrates the software program installed in Communication Device 200 to initiate the present function. First of all, a list of modes is displayed on LCD 201 (Fig. 1) (S1). When an input signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system to select a specific mode (S2), the selected mode is activated.

In the present example, the communication mode is activated (S3a) when the communication mode is selected in the previous step, the game download mode and the game play mode are activated (S3b) when the game download mode and the game play mode are selected in the previous step of which the details are described in Fig. 137, and the honk/light generating mode is activated (S3c) when the honk/light generating mode is selected in the previous step. The modes displayed on LCD 201 in S1 which are selectable in S2 and S3 may include all functions and modes explained in this specification. Once the selected mode is activated, another mode can be activated while the first activated mode is still implemented by going through the steps of S1 through S3 for another mode, thereby enabling a plurality of functions and modes being performed simultaneously (S4).

[2170] Fig. 181b illustrates the data stored in RAM 206 (Fig. 1). As described in Fig. 181b, the data to activate (as described in S3a of the previous figure) and to perform the communication mode is stored in Communication Data Storage Area 2061a, the data to activate (as described in S3b of the previous figure) and to perform the game download mode and the game play mode are stored in

Game DL/Play Data Storage Area 2061b/2061c of which the details are described in Fig. 138, and the data to activate (as described in S3c of the previous figure) and to perform the honk/light generating mode is stored in Automobile Find Data Storage Area 2065b.

[2171] Fig. 181c illustrates the method to store the wireless data to the relevant storage area in RAM 206 (Fig. 1). A wireless signal is received via Antenna 218 (Fig. 1) (S1). The received wireless signal is decompressed and converted into a CPU readable format by Signal Processor 208 (Fig. 1), and CPU 211 (Fig. 1) reads the header or the title of the data to identify its data-type in order to determine the location at which the data is stored (S2). According to the identified data-type, communication data is stored in Communication Storage Area 2061a (S3a), game DL data and game play data area stored in Game DL/Play Data Storage Area 2061b/2061c (S3b), and honk/light generating data is stored in Honk/Light Generating Data Storage Area 2065b (S3c). The sequence of S1 through S3 is repeated endlessly in order to enable to receive and store multiple types of data simultaneously. For example, the first portion of honk/light generating data is processed as described in S3c while the first portion of communication

data is processed as described in S3a, and the second portion of honk/light generating data is processed as described in S3c while the first portion of game DL data is processed as described in S3b. The wireless signal received via Antenna 218 may be in TDMA format, FDMA format, and/or CDMA format.

[2172] Figs. 181d and 181e illustrate the method to identify the current position of Automobile 835 (Fig. 180) by Communication Device 200, which is located somewhere in the matrix of relays illustrated in Fig. 20b. Here, the matrix of relays illustrated in Fig. 20b is equivalent to GPS artificial satellite. Assuming that Communication Device 200 seeks to honk and/or emit light of Automobile 835.

[2173] As described in Fig. 181d, first of all an automobile ID of Automobile 835 (Fig. 180) is entered by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). As another embodiment, a list of automobile IDs may be listed on LCD 201 (Fig. 1), and the user of Communication Device 200 may select one by utilizing Input Device 210 or via voice recognition system instead. The automobile ID may be Automobile 835's corresponding phone number or the license number assigned thereto. A request data including the automobile ID is sent to Host H (not shown)

from Communication Device 200 (S2).

[2174] As illustrated in Fig. 181e, Host H (not shown) periodically receives data from Communication Device 200 (S1). If the received data is a request data (S2), Host H first of all searches its communication log which records the location of Automobile 835 (Fig. 180) when it last communicated with Host H (S3). Then Host H sends a honk/light generating signal from the relays described in Fig. 20b which are located within 100 meter radius from the location registered in the communication log. If there is no response from Automobile 835 (S5), Host H sends the honk/light generating signal from all relays (from R1 to R20 in Fig. 20b) to search for Automobile 835 (Fig. 180) (S6).

[2175] Fig. 182 illustrates the software program stored in Honk/Light Generating Software Storage Area 835c of Automobile RAM 835b (Fig. 181). As illustrated in Fig. 182, Automobile CPU 835e (Fig. 180) periodically checks the status of the incoming wireless signals (S1). If a honk/light generating signal is detected (S2), Automobile CPU 835e sends a response signal to Host H (not shown) via Antenna 218 (Fig. 1) and a signal to Honk/Light Generator 835g (Fig. 180) of Automobile 835 (S3).

[2176] *<<Mobile Ignition Key Function>>*

[2177] Figs. 183 through 201 illustrate the mobile ignition key function, i.e., a function to ignite an engine of Automobile 835 with Communication Device 200.

[2178] Fig. 183 illustrates the structure of Automobile 835 to implement the mobile ignition key function. Automobile 835 includes Automobile CPU 835e, Automobile Wireless Communicator 835d, Automobile RAM 835f, and Automobile Engine 835i. Automobile CPU 835e implements the mobile ignition key system by running the software program stored in Automobile RAM 835f, Automobile Wireless Communicator 835d is capable of sending and receiving wireless signal in order to communicate with Communication Device 200 in a wireless fashion, Automobile RAM 835f stores the software program necessary to implement the mobile ignition key system which is explained in details hereinafter, and Automobile Engine 835i is an engine which is ignited under the control of Automobile CPU 835e.

[2179] Fig. 184 illustrates the data stored in Automobile RAM 835f (Fig. 183). Automobile RAM 835f includes Ignition Key Code Authentication Software Storage Area 835j and Ignition Key Code Storage Area 835k. Ignition Key Code Authentication Software Storage Area 835j stores ignition

key code authentication software program which is explained in Fig. 185, and Ignition Key Code Storage Area 835k stores an ignition key code which is composed of alphanumeric data.

[2180] Fig. 185 illustrates the software program stored in Ignition Key Code Authentication Software Storage Area 835j (Fig. 184). As described in Fig. 185, Automobile CPU 835e (Fig. 183) periodically checks the incoming wireless signal received by Automobile Wireless Communicator 835d (Fig. 183) (S1). If the incoming wireless signal includes an ignition key code (S2), Automobile CPU 835e retrieves the ignition key code stored in Ignition Key Code Storage Area 835k and compares both data (S3). If the received ignition key code matches the ignition key code stored in Ignition Key Code Storage Area 835k (S4), Automobile CPU 835e instructs Automobile Engine 835i to ignite (S5).

[2181] Fig. 186 illustrates the software program installed in Communication Device 200 to initiate the present function. First of all, a list of modes is displayed on LCD 201 (Fig. 1) (S1). When an input signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system to select a specific mode (S2), the selected mode is activated. In the present example, the communication mode is acti-

vated (S3a) when the communication mode is selected in the previous step, the game download mode and the game play mode are activated (S3b) when the game download mode and the game play mode are selected in the previous step of which the details are described in Fig. 137, and the ignition key mode is activated (S3c) when the ignition key mode is selected in the previous step. The modes displayed on LCD 201 in S1 which are selectable in S2 and S3 may include all functions and modes explained in this specification. Once the selected mode is activated, another mode can be activated while the first activated mode is still implemented by going through the steps of S1 through S3 for another mode, thereby enabling a plurality of functions and modes being performed simultaneously (S4).

[2182] Fig. 187 illustrates the data stored in RAM 206 (Fig. 1). As described in Fig. 187, the data to activate (as described in S3a of the previous figure) and to perform the communication mode is stored in Communication Data Storage Area 2061a, the data to activate (as described in S3b of the previous figure) and to perform the game download mode and the game play mode are stored in Game DL/ Play Data Storage Area 2061b/2061c of which the details

are described in Fig. 138, and the data to activate (as described in S3c of the previous figure) and to perform the ignition key mode is stored in Ignition Key Data Storage Area 2066a.

[2183] Fig. 188 illustrates the data stored in Ignition Key Data Storage Area 2066a (Fig. 187). Ignition key Data Storage Area 2066a includes Ignition Key Code Transmitting Software Storage Area 2066b and Ignition Key Code Storage Area 2066c. Ignition Key Code Transmitting Software Storage Area 2066b stores a software program to transmit the ignition key code to Automobile 835 (Fig. 183), which is explained in Fig. 188a. Ignition Key Code Storage Area 2066c stores an ignition key code which is transmitted to Automobile 835 to ignite Automobile Engine 835i (Fig. 183). Ignition Key Code Storage Area 2066c also stores user ID and password of the user of Communication Device 200.

[2184] Fig. 188a illustrates the software program stored in Ignition Key Code Transmitting Software Storage Area 2066b (Fig. 188). Firsts of all, the user of Communication Device 200 inputs an user ID and password (S1). CPU 211 (Fig. 1) retrieves the user ID and password from Ignition Key Code Storage Area 2066c (Fig. 188) and compares with the in-

put user ID and password. If both sets of data match (S2), CPU 211 displays the ignition key code on LCD 201 (Fig. 1) stored in Ignition Key Code Storage Area 2066c (S3). When a certain signal is input from Input Device 210 (Fig. 1) to grant transmitting the ignition key code (S4), CPU 211 transmits the ignition key code via Antenna 218 (Fig. 1) in a wireless fashion (S5).

[2185] Fig. 189 illustrates the method to transmit the ignition key code from Communication Device 200 to Automobile 835 (Fig. 183). As described in Fig. 189, the ignition key code is transmitted from Communication Device 200 to Automobile 835 via Network NT, such as the Internet. The transmissions between Communication Device 200 -- Network NT and Network NT -- Automobile 835 are rendered in a wireless fashion.

[2186] Fig. 190 illustrates another method to transmit the ignition key code from Communication Device 200 to Automobile 835 (Fig. 183). In this embodiment, the ignition key code is transmitted directly to Automobile 835 from Communication Device 200. The bluetooth may be utilized to implement this method of transmission.

[2187] Figs. 191 through 193 illustrate the method for Host H to ignite Automobile Engine 835i (Fig. 183).

[2188] Fig. 191 illustrates the connection between Host H and Automobile 835. As described in Fig. 191, Host H and Automobile 835 are connected via Network NT, such as the Internet. The transmissions between Host H -- Network NT and Network NT -- Automobile 835 are rendered in a wireless fashion.

[2189] Fig. 192 illustrates the data stored in Host H. As described in Fig. 192, Host H includes Customers' Ignition Key Code Transmitting Software Storage Area Hg and Customers' Ignition Key Code Storage Area Hh. The software program stored in Customers' Ignition Key Code Transmitting Software Storage Area Hg, in the first step, selects the ignition key code and then, in the second step, transmits the selected ignition key code to Automobile 835 by the method explained in Fig. 191. The selection of ignition key code may be manually performed by an operator (i.e., human being) by the request of the user of Communication Device 200 (i.e., the owner of Automobile 835). The data stored in Customers' Ignition Key Code Storage Area Hh is explained in Fig. 193.

[2190] Fig. 193 illustrates the data stored in Customers' Ignition Key Code Storage Area Hh (Fig. 192). As described in Fig. 193, a plurality of ignition key codes are stored in Cus-

tomers' Ignition Key Code Storage Area Hh. In the present example, Ignition Key Code IKC1 corresponding to Automobile AM1, Ignition Key Code IKC2 corresponding to Automobile AM2, Ignition Key Code IKC3 corresponding to Automobile AM3, Ignition Key Code IKC4 corresponding to Automobile AM4, Ignition Key Code IKC5 corresponding to Automobile AM5, Ignition Key Code IKC6 corresponding to Automobile AM6, Ignition Key Code IKC7 corresponding to Automobile AM7, Ignition Key Code IKC8 corresponding to Automobile AM8, and Ignition Key Code IKC9 corresponding to Automobile AM9 are stored in Customers' Ignition Key Code Storage Area Hh.

[2191] Fig. 194 illustrates a software program, which is stored in Ignition Key Data Storage Area 2066a (Fig. 188, however, specific storage area not shown), to change the ignition key code stored in Customers' Ignition Key Code Storage Area Hh (Fig. 193) of Host H (Fig. 191) by the user of Communication Device 200. Firsts of all, the user of Communication Device 200 inputs user ID and password by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) retrieves the user ID and password from Ignition Key Code Storage Area 2066c (Fig. 188) and compares with the input user ID and password.

If both sets of data match (S2), CPU 211 displays a list of the ignition key code stored in Ignition Key Code Storage Area 2066c assuming that more than one ignition key code is stored therein (S3). After selecting a certain ignition key code by utilizing Input Device 210 or via voice recognition system (S4) and confirmation process (S5) by the user of Communication Device 200 are completed, the user inputs a new ignition key code and retypes the new ignition key code for confirmation (S6). If CPU 211 determines that both ignition key codes are exactly the same (S7), it transmits a change signal including the new ignition key code to Host H in a wireless fashion via Antenna 218 (Fig. 1) (S8).

[2192] Fig. 195 illustrates a software program, which is stored in Host H (Fig. 192, however, specific storage area not shown) to change the ignition key code stored in Customers' Ignition Key Code Storage Area Hh (Fig. 192). First of all, Host H periodically checks the incoming wireless signal received (S1). If the received incoming signal is a change signal transmitted from Communication Device 200 (S2), Host H retrieves the user ID and password stored in a specific area of Customers' Ignition Key Code Storage Area Hh (Fig. 192, however, specific storage area

not shown) and compares with the user ID and password included in the received change signal. If Host H determines that both data are exactly the same (S3), it changes the ignition key code stored in Customers' Ignition Key Code Storage Area Hh to a new one (S4).

[2193] Fig. 196 illustrates another structure of Automobile 835 to implement the mobile ignition key function. Automobile 835 includes Automobile CPU 835e, Automobile Wireless Communicator 835d, Automobile RAM 835f, and Automobile Engine 835i. Automobile CPU 835e implements the mobile ignition key system by running the software program stored in Automobile RAM 835f, Automobile Wireless Communicator 835d is capable of sending and receiving wireless signal in order to communicate with Communication Device 200 in a wireless fashion, Automobile RAM 835f stores the software program necessary to implement the mobile ignition key system, and Automobile Engine 835i is an engine which is ignited under the control of Automobile CPU 835e. The new element added to this embodiment compared to the one described in Fig. 183 is Conventional Ignition Key Controller 835l. Conventional Ignition Key Controller 835l is a device to ignite Automobile Engine 835i by way of inserting a tangible igni-

tion key therein. The user of Communication Device 200 is allowed to ignite Automobile Engine 835i by utilizing a tangible ignition key in a conventional manner instead of transmitting an ignition key code from Communication Device 200 in this embodiment.

[2194] Fig. 197 illustrates another example of the data stored in Ignition Key Code Storage Area 2066c (Fig. 188). Ignition Key Code Storage Area 2066c is capable of storing a plurality of ignition key codes in this embodiment. In the present example, Ignition Key Code IKCa corresponding to Automobile AMa, Ignition Key Code IKCb corresponding to Automobile AMb, and Ignition Key Code IKCc corresponding to Automobile AMc are stored in Ignition Key Code Storage Area 2066c.

[2195] Fig. 198 illustrates the software program stored in Ignition Key Code Transmitting Software Storage Area 2066b (Fig. 188). The software program illustrated in Fig. 198 is similar to the one illustrated in Fig. 188a except that the present embodiment allows the user of Communication Device 200 to select one ignition key code from a list of ignition key codes to be transmitted to Automobile 835 (Fig. 183). As described in Fig. 198, the user of Communication Device 200, first of all, inputs user ID and password

by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) retrieves the user ID and password from Ignition Key Code Storage Area 2066c (Fig. 188) and compares with the input user ID and password. If both sets of data match (S2), CPU 211 displays a list of ignition key code on LCD 201 (Fig. 1) stored in Ignition Key Code Storage Area 2066c (S3). The user of Communication Device 200 selects one of the ignition key codes by utilizing Input Device 210 or by the voice recognition system (S4). When a certain signal is input from Input Device 210 (Fig. 1) or via voice recognition system to grant transmitting the ignition key code (S5), CPU 211 transmits the ignition key code via Antenna 218 (Fig. 1) in a wireless fashion (S6).

[2196] Fig. 199 illustrates another example of the data stored in Ignition Key Code Storage Area 2066c (Fig. 188). Compared to the one illustrated in Fig. 197, Ignition Key Code Storage Area 2066c in this embodiment stores a plurality of ignition key codes for automobiles and motorcycles, and also stores key codes for doors of a house. More precisely, Ignition Key Code IKCa corresponding to Automobile AMa, Ignition Key Code IKCb corresponding to Automobile AMb, Ignition Key Code IKCc corresponding to Au-

tomobile AMc, Ignition Key Code IKCd corresponding to Automobile AMd, Ignition Key Code IKCe corresponding to Automobile AMe, Ignition Key Code IKCf corresponding to Motorcycle MCa, Ignition Key Code IKCg corresponding to Motorcycle MCb, Ignition Key Code IKCh corresponding to Motorcycle MCc, Key Code KCa corresponding to Entrance Door ED, Key Code KCb corresponding to Back Door BD, and Key Code KCc corresponding to Side Door SD are stored in Ignition Key Code Storage Area 2066c.

[2197] Fig. 200 illustrates a software program, which is stored in Ignition Key Data Storage Area 2066a (Fig. 188, however, specific storage area not shown), to change the ignition key code stored in Ignition Key Code Storage Area 835k (Fig. 184) of Automobile 835 (Fig. 183) by the user of Communication Device 200. Firsts of all, the user of Communication Device 200 inputs user ID and password by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) retrieves the user ID and password from Ignition Key Code Storage Area 2066c (Fig. 188) and compares with the input user ID and password. If both sets of data match (S2), CPU 211 displays a list of the ignition key codes stored in Ignition Key Code Storage Area 2066c (S3). After selecting a certain ignition key code

by utilizing Input Device 210 or via voice recognition system (S4) and confirmation process (S5) by the user of Communication Device 200 are completed, the user inputs a new ignition key code and retypes the new ignition key code for confirmation (S6). If CPU 211 determines that both ignition key codes are exactly the same (S7), it transmits a change signal including the new ignition key code to Automobile 835 in a wireless fashion via Antenna 218 (Fig. 1) (S8).

[2198] Fig. 201 illustrates a software program, which is stored in Automobile RAM 835f (Fig. 184, however, specific storage area not shown) to change the ignition key code stored in Ignition Key Code Storage Area 835k (Fig. 184). First of all, Automobile CPU 835e (Fig. 183) periodically checks the incoming wireless signal received by Automobile Wireless Communicator 835d (Fig. 183) (S1). If the received incoming signal is a change signal transmitted from Communication Device 200 (S2), Automobile CPU 835e retrieves the user ID and password stored in Automobile RAM 835f (Fig. 184, however, specific storage area not shown) and compares with the user ID and password included in the received change signal. If Automobile CPU 835e determines that both data are exactly the same (S3),

it changes the ignition key code stored in automobile RAM 835k to a new one (S4).

[2199] *<<Voice Print Authentication System>>*

[2200] Figs. 202 through 211 illustrate the voice print authentication system of Communication Device 200.

[2201] Fig. 202 illustrates the software program installed in Communication Device 200 to initiate the present system. First of all, a list of modes is displayed on LCD 201 (Fig. 1) (S1). When an input signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system to select a specific mode (S2), the selected mode is activated. In the present example, the communication mode is activated (S3a) when the communication mode is selected in the previous step, the game download mode and the game play mode are activated (S3b) when the game download mode and the game play mode are selected in the previous step of which the details are described in Fig. 137, and the authentication mode is activated (S3c) when the authentication mode is selected in the previous step. The modes displayed on LCD 201 in S1 which are selectable in S2 and S3 may include all functions and modes explained in this specification. Once the selected mode is activated, another mode can be activated while the first activated

mode is still implemented by going through the steps of S1 through S3 for another mode, thereby enabling a plurality of functions and modes being performed simultaneously (S4).

[2202] Fig. 203 illustrates the data stored in RAM 206 (Fig. 1). As described in Fig. 203, the data to activate (as described in S3a of the previous figure) and to perform the communication mode is stored in Communication Data Storage Area 2061a, the data to activate (as described in S3b of the previous figure) and to perform the game download mode and the game play mode are stored in Game DL/Play Data Storage Area 2061b/2061c of which the details are described in Fig. 138, and the data to activate (as described in S3c of the previous figure) and to perform the authentication mode is stored in Authentication Data Storage Area 2067f.

[2203] Fig. 204 illustrates the data stored in Authentication Data Storage Area 2067f (Fig. 1). As described in Fig. 204, Authentication Data Storage Area 2067f includes Input Voice Data Storage Area 2067a, Authentication Software Storage Area 2067b, and Voice Print Data Storage Area 2067c. Input Voice Data Storage Area 2067a stores a voice data input from Microphone 215 (Fig. 1), Authentication Software

Storage Area 2067b stores software program to implement the present function explained hereinafter, and Voice Print Data Storage Area 2067c stores Voice Print Data #1 2067d and Voice Print Data #2 2067e, as described in Fig. 204, both of which are utilized for comparison by the software program stored in Authentication Software Storage Area 2067b.

[2204] Fig. 205 illustrates the concept of the voice print authentication software program explained in details hereinafter. First of all, CPU 211 (Fig. 1) compares the voice data stored in Input Voice Data Storage Area 2067a (Fig. 204) with one or more of the voice print data stored in Voice Print Data Storage Area 2067c (Fig. 204) (S1). If both data area exactly the same (S2), the voice print authentication process is successful and CPU 211 thereby unlocks Communication Device 200 (i.e., authorizes to utilize Communication Device 200) (S3).

[2205] Fig. 206 illustrates an embodiment of the voice print authentication software program stored in Authentication Software Storage Area 2067b (Fig. 204). As described in Fig. 206, user ID is input via Microphone 215 (Fig. 1), which is stored in Input Voice Data Storage Area 2067a (Fig. 204) (S1). CPU 211 (Fig. 1) retrieves Voice Print Data

#1 2067d from Voice Print Data Storage Area 2067c (Fig. 204) (S2). If both data are exactly the same (S3), password is then input via Microphone 215 (Fig. 1), which is also stored in Input Voice Data Storage Area 2067a (S4). CPU 211 retrieves Voice Print Data #2 2067e from Voice Print Data Storage Area 2067c (S5). If both data are exactly the same (S6), the voice print authentication process is successful and CPU 211 thereby unlocks Communication Device 200 (i.e., authorizes to utilize Communication Device 200) (S7).

[2206] Fig. 207 illustrates another embodiment of the voice print authentication software program stored in Authentication Software Storage Area 2067b (Fig. 204). As described in Fig. 207, user ID and password are input consecutively via Microphone 215 (Fig. 1), which are stored in Input Voice Data Storage Area 2067a (Fig. 204) (S1). CPU 211 (Fig. 1) retrieves Voice Print Data #1 2067d and Voice Print Data #2 2067e from Voice Print Data Storage Area 2067c (Fig. 204) (S2). If both sets of data are exactly the same (S3), the voice print authentication process is successful and CPU 211 thereby unlocks Communication Device 200 (i.e., authorizes to utilize Communication Device 200) (S4).

[2207] Figs 208 and 209 illustrate the method to process with

the voice data input from Microphone 215 (Fig. 1) in the authentication mode and the communication mode utilizing the voice recognition system. As described in Fig. 208, when Communication Device 200 is in the authentication mode, CPU 211 (Fig. 1) periodically checks voice data from Microphone 215 (Fig. 1) (S1), and if CPU 211 detects a voice data input (S2), it stores the voice data in Input Voice Data Storage Area 2067a (Fig. 204) (S3) in order to proceed with the authentication process explained hereinbefore (S4). As described in Fig. 209, when Communication Device 200 is in the communication mode, CPU 211 periodically checks voice data from Microphone 215 (Fig. 1) (S1) and proceeds with the voice data to implement the voice recognition system as explained hereinbefore (S2).

[2208] Figs. 210a and 210b illustrate the software program to change or renew Voice Print Data #1 2067d stored in Voice Print Data Storage Area 2067c (Fig. 204). First of all, an authentication code is input via Input Device 210 (Fig. 1) or via Microphone 215 (Fig. 1) by utilizing the voice recognition system (S1). CPU 211 (Fig. 1) then retrieves the authentication code stored in Authentication Data Storage Area 2067f (Fig. 204, however specific storage area not shown) and compares both data. If both data are

exactly the same (S2), CPU 211 displays a list of voice print data stored in Voice Print Storage Area 2067c (Fig. 204), i.e., Voice Print Data #1 2067d and Voice Print Data #2 2067e (S3), and Voice Print Data #1 2067d is selected by Input Device 210 or by the voice recognition system (S4). The old Voice Print Data #1 is input via Microphone 215 and compared with Voice Print Data #1 2067d stored in Voice Print Data Storage Area 2067c (S5). If both data are exactly the same (S6), a new data is input via Microphone 215, and the same voice data is input again for verification (S7). If both data are exactly the same (S8), the new voice data is stored in Voice Print Data Storage Area 2067c as Voice Print Data #1 2067d (S9).

[2209] Figs. 211a and 211b illustrate the software program to change or renew Voice Print Data #2 2067e stored in Voice Print Data Storage Area 2067c (Fig. 204). First of all, an authentication code is input via Input Device 210 (Fig. 1) or via Microphone 215 (Fig. 1) by utilizing the voice recognition system (S1). CPU 211 (Fig. 1) then retrieves the authentication code stored in Authentication Data Storage Area 2067f (Fig. 204, however specific storage area not shown) and compares both data. If both data are exactly the same (S2), CPU 211 displays a list of voice

print data stored in Voice Print Storage Area 2067c (Fig. 204), i.e., Voice Print Data #1 2067d and Voice Print Data #2 2067e (S3), and Voice Print Data #2 2067e is selected by Input Device 210 or by the voice recognition system (S4). The old Voice Print Data #2 is input via Microphone 215 and compared with Voice Print Data #2 2067e stored in Voice Print Data Storage Area 2067c (S5). If both data are exactly the same (S6), a new data is input via Microphone 215, and the same voice data is input again for verification (S7). If both data are exactly the same (S8), the new voice data is stored in Voice Print Data Storage Area 2067c as Voice Print Data #2 2067e (S9).

[2210] *<<Fingerprint Authentication System>>*

[2211] Figs. 212 through 221 illustrate the fingerprint authentication system of Communication Device 200 (Fig. 1).

[2212] Fig. 212 illustrates the structure of Communication Device 200 to implement the fingerprint authentication system. As described in Fig. 212, communication system 200 includes Fingerprint Scanner FPS and Eye Print Scanner EPS.

[2213] Fig. 213 illustrates the data stored in RAM 206 (Fig. 1). As described in Fig. 213, RAM 206 includes Authentication Software Storage Area 2068a, Fingerprint Data Storage Area 2068b, and Eye Print Data Storage Area 2068c. Au-

thentication Software Storage Area 2068a stores an authentication software program to implement the fingerprint authentication system of which the details are explained hereinafter, Fingerprint Data Storage Area 2068b stores the data regarding the fingerprints of both hands of the user of Communication Device 200 (i.e., L1, L2, L3, L4, L5, R1, R2, R3, R4, and R5), and Eye Print Data Storage Area 2068c stores the data regarding eye prints of both eyes of the user of Communication Device 200 (i.e., E1 and E2). Here, L1 represents the fingerprint data regarding the left thumb, L2 represents the fingerprint data regarding the left first finger, L3 represents the fingerprint data regarding the left second finger, L4 represents the fingerprint data regarding the left third finger, L5 represents the fingerprint data regarding the left little finger, R1 represents the fingerprint data regarding the right thumb, R2 represents the fingerprint data regarding the right first finger, R3 represents the fingerprint data regarding the right second finger, R4 represents the fingerprint data regarding the right third finger, and R5 represents the fingerprint data regarding the right little finger. In addition, E1 represents the eye print data regarding the left eye and E2 represents the eye print data regarding the

right eye.

[2214] Fig. 214 illustrates the concept of the fingerprint authentication software program which is stored in Authentication Software Storage Area 2068a (Fig. 213), and the details of which is explained hereinafter. First of all, CPU 211 (Fig. 1) compares the fingerprint data scanned by Fingerprint Scanner FPS (Fig. 212) with one or more of the fingerprint data stored in Fingerprint Data Storage Area 2068b (Fig. 213) (S1). If both data area exactly the same (S2), the fingerprint authentication process is successful and CPU 211 thereby unlocks Communication Device 200 (i.e., authorizes to utilize Communication Device 200) (S3).

[2215] Fig. 215 illustrates an embodiment of the fingerprint authentication software program stored in Authentication Software Storage Area 2068a (Fig. 213). First of all, the user of Communication Device 200 selects one of his/her fingers at his/her discretion and scan the fingerprint by Fingerprint Scanner FPS (Fig. 212) (S1). CPU 211 (Fig. 1) then retrieves all fingerprint data from Fingerprint Data Storage Area 2068b (Fig. 213) and compares with the user's fingerprint data. If both data are exactly the same (S2), the user of Communication Device 200 selects an-

other finger (other than the one scanned in S1) at his/her discretion and scan the fingerprint by Fingerprint Scanner FPS (Fig. 212) (S3). CPU 211 (Fig. 1) then retrieves all fingerprint data from Fingerprint Data Storage Area 2068b (Fig. 213) excluding the one already utilized in S2 and compare with the user's fingerprint data. If both data are exactly the same (S4), the fingerprint authentication process is successful and CPU 211 thereby unlocks Communication Device 200 (i.e., authorizes to utilize Communication Device 200) (S5).

[2216] Fig. 216 illustrates another embodiment of the fingerprint authentication software program stored in Authentication Software Storage Area 2068a (Fig. 213). First of all, CPU 211 (Fig. 1) selects the predetermined fingerprint (e.g., the fingerprint of the right first finger) to be scanned and displays on LCD 201 (Fig. 1) (S1). The user of Communication Device 200 then scans the selected fingerprint (e.g., the fingerprint of the right first finger) by Fingerprint Scanner FPS (Fig. 212) (S2). CPU 211 retrieves the predetermined fingerprint data (e.g., R2) from Fingerprint Data Storage Area 2068b (Fig. 213) and compares with the users fingerprint data. If both data are exactly the same (S3), CPU 211 selects another predetermined finger-

print (e.g., the fingerprint of the left first finger) to be next scanned and displays on LCD 201 (S4). The user of Communication Device 200 then scans the selected fingerprint (e.g., the fingerprint of the left first finger) by Fingerprint Scanner FPS (S5). CPU 211 then retrieves the predetermined fingerprint data (e.g., L2) from Fingerprint Data Storage Area 2068b and compare with the user's fingerprint data. If both data are exactly the same (S6), the fingerprint authentication process is successful and CPU 211 thereby unlocks Communication Device 200 (i.e., authorizes to utilize Communication Device 200) (S7).

[2217] Fig. 217 illustrates another embodiment of the fingerprint authentication software program stored in Authentication Software Storage Area 2068a (Fig. 213). First of all, CPU 211 (Fig. 1) randomly selects the fingerprint to be scanned and displays on LCD 201 (Fig. 1) (S1). The user of Communication Device 200 then scans the selected fingerprint by Fingerprint Scanner FPS (Fig. 212) (S2). CPU 211 retrieves the fingerprint data selected in S1 from Fingerprint Data Storage Area 2068b (Fig. 213) and compares with the user's fingerprint data. If both data are exactly the same (S3), CPU 211 randomly selects the fingerprint to be next scanned and displays on LCD 201 (S4). The user

of Communication Device 200 then scans the selected fingerprint by Fingerprint Scanner FPS (S5). CPU 211 then retrieves the fingerprint data selected in S4 from Fingerprint Data Storage Area 2068b and compare with the user's fingerprint data. If both data are exactly the same (S6), the fingerprint authentication process is successful and CPU 211 thereby unlocks Communication Device 200 (i.e., authorizes to utilize Communication Device 200) (S7).

[2218] Fig. 218 illustrates another embodiment of the fingerprint authentication software program stored in authentication Software Storage Area 2067a (Fig. 213). First of all, the user of Communication Device 200 selects two of his/her fingers at his/her discretion and scan the fingerprints by Fingerprint Scanner FPS (Fig. 212) (S1). CPU 211 (Fig. 1) then retrieves all fingerprint data from Fingerprint Data Storage Area 2068b (Fig. 213) and compares with the user's fingerprint data. If both sets of data are exactly the same (S2), the fingerprint authentication process is successful and CPU 211 thereby unlocks Communication Device 200 (i.e., authorizes to utilize Communication Device 200) (S3).

[2219] Fig. 219 illustrates another embodiment of the fingerprint authentication software program stored in Authentication

Software Storage Area 2068a (Fig. 213). First of all, CPU 211 (Fig. 1) selects two predetermined fingerprints (e.g., the right first finger and the left first finger) to be scanned and displays on LCD 201 (Fig. 1) (S1). The user of Communication Device 200 then scans the selected fingerprints (e.g., the right first finger and the left first finger) by Fingerprint Scanner FPS (Fig. 212) (S2). CPU 211 retrieves two predetermined fingerprint data (e.g., R2 and L2) from Fingerprint Data Storage Area 2068b (Fig. 213) and compares with the user's fingerprint data. If both sets of data are exactly the same (S3), the fingerprint authentication process is successful and CPU 211 thereby unlocks Communication Device 200 (i.e., authorizes to utilize Communication Device 200) (S7).

[2220] Fig. 220 illustrates another embodiment of the fingerprint authentication software program stored in Authentication Software Storage Area 2068a (Fig. 213). First of all, CPU 211 (Fig. 1) randomly selects two fingerprints to be scanned and displays on LCD 201 (Fig. 1) (S1). The user of Communication Device 200 then scans the selected fingerprints by Fingerprint Scanner FPS (Fig. 212) (S2). CPU 211 retrieves fingerprint data selected in S1 from Fingerprint Data Storage Area 2068b (Fig. 213) and compares

with the user's fingerprint data. If both sets of data are exactly the same (S3), the fingerprint authentication process is successful and CPU 211 thereby unlocks Communication Device 200 (i.e., authorizes to utilize Communication Device 200) (S7).

[2221] Fig. 221 illustrates another embodiment of the fingerprint authentication software program stored in Authentication Software Storage Area 2068a (Fig. 213). First of all, the user of Communication Device 200 selects one of his/her fingers at his/her discretion and scan the fingerprint by Fingerprint Scanner FPS (Fig. 212) (S1). CPU 211 (Fig. 1) then retrieves all fingerprint data from Fingerprint Data Storage Area 2068b (Fig. 213) and compares with the user's fingerprint data. If both data are exactly the same (S2), the fingerprint authentication process is successful and CPU 211 thereby unlocks Communication Device 200 (i.e., authorizes to utilize Communication Device 200) (S3).

[2222] As another embodiment, Fingerprint Scanner FPS explained in Fig. 212 can be composed of two scanners FPS1 and FPS2 (both of which not shown in Fig. 212) in order to scan two fingerprints simultaneously.

[2223] *<<Auto Time Adjust Function>>*

[2224] Figs. 222 to 224 illustrate the automatic time adjust function, i.e., a function which automatically adjusts the clock of Communication Device 200.

[2225] Fig. 222 illustrates the data stored in RAM 206 (Fig. 1). As described in Fig. 222, RAM 206 includes Auto Time Adjust Software Storage Area 2069a, Current Time Data Storage Area 2069b, and Auto Time Data Storage Area 2069c. Auto Time Adjust Software Storage Area 2069a stores software program to implement the present function which is explained in details hereinafter, Current Time Data Storage Area 2069b stores the data which represents the current time, and Auto Time Data Storage Area 2069c is a working area assigned for implementing the present function.

[2226] Fig. 223 illustrates a software program stored in Auto Time Adjust Software Storage Area 2069a (Fig. 222). First of all, Communication Device 200 is connected to Network NT (e.g., the Internet) via Antenna 218 (Fig. 1) (S1). CPU 211 (Fig. 1) then retrieves an atomic clock data from Network NT (S2) and the current time data from Current Time Data Storage Area 2069b (Fig. 222), and compares both data. If the difference between both data is not within the predetermined value X (S3), CPU 211 adjusts the current

time data (S4). The method to adjust the current data can be either simply overwrite the data stored in Current Time Data Storage Area 2069b with the atomic clock data retrieved from Network NT or calculate the difference of the two data and add or subtract the difference to or from the current time data stored in Current Time Data Storage Area 2069b by utilizing Auto Time Data Storage Area 2069c (Fig. 222) as a working area.

[2227] Fig. 224 illustrates another software program stored in Auto Time Adjust Software Storage Area 2069a (Fig. 222). When the power of Communication Device 200 is turned on (S1), CPU 211 (Fig. 1) stores a predetermined timer value in Auto Time Data Storage Area 2069c (Fig. 222) (S2). The timer value is decremented periodically (S3). When the timer value equals to zero (S4), the automatic timer adjust function is activated (S5) and CPU 211 performs the sequence described in Fig. 223, and the sequence of S2 through S4 is repeated thereafter.

[2228] *<<Video/Photo Mode>>*

[2229] Fig. 225 illustrates the details of CCD Unit 214 (Fig. 1). As described in Fig. 225, CCD Unit 214 is mounted on Rotator 291 (Fig. 44c) which is rotatably connected to the side of Communication Device 200 as described in Fig. 44c.

Indicator 212 (Fig. 1) is attached to the surface of CCD Unit 214.

[2230] Fig. 226 illustrates the software program installed in Communication Device 200 to initiate the present function. First of all, a list of modes is displayed on LCD 201 (Fig. 1) (S1). When an input signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system to select a specific mode (S2), the selected mode is activated. In the present example, the communication mode is activated (S3a) when the communication mode is selected in the previous step, the game download mode and the game play mode are activated (S3b) when the game download mode and the game play mode are selected in the previous step of which the details are described in Fig. 137, and the video/photo mode is activated (S3c) when the video/photo mode is selected in the previous step. The modes displayed on LCD 201 in S1 which are selectable in S2 and S3 may include all functions and modes explained in this specification. Once the selected mode is activated, another mode can be activated while the first activated mode is still implemented by going through the steps of S1 through S3 for another mode, thereby enabling a plurality of functions and modes being performed

simultaneously (S4).

[2231] Fig. 227 illustrates the data stored in RAM 206 (Fig. 1). As described in Fig. 227, the data to activate (as described in S3a of the previous figure) and to perform the communication mode is stored in Communication Data Storage Area 2061a, the data to activate (as described in S3b of the previous figure) and to perform the game download mode and the game play mode are stored in Game DL/Play Data Storage Area 2061b/2061c of which the details are described in Fig. 138, and the data to activate (as described in S3c of the previous figure) and to perform the video/photo mode is stored in Video/Photo Data Storage Area 20610a.

[2232] Fig. 228 illustrates the software programs and data stored in Video/Photo Data Storage Area 20610a (Fig. 227). As described in Fig. 228, Video/Photo Data Storage Area 20610a includes Video/Photo Software Storage Area 20610b, Video Data Storage Area 20610c, Audio Data Storage Area 20610d, Photo Data Storage Area 20610e, Photo Sound Data Storage Area 20610f, and Indicator Data Storage Area 20610g. Video/Photo Software Storage Area 20610b stores the software programs described in Figs. 231 through 233a, 233d, 233e, 236 through 238,

240, and 242. Video Data Storage Area 20610c stores the data described in Fig. 228a. Audio Data Storage Area 20610d stores the data described in Fig. 228b. Photo Data Storage Area 20610e stores the data described in Fig. 228c. Photo Sound Data Storage Area 20610f stores a sound data (preferably a wave data) producing a sound similar to the one when a conventional camera is activated. Indicator Data Storage Area 20610g stores the data described in Fig. 229. Video Data Storage Area 20610c and Audio Data Storage Area 20610d primarily stores the similar data stored in Area 267 and Area 268 of Fig. 39, respectively.

[2233] Fig. 228a illustrates the data stored in Video Data Storage Area 20610c (Fig. 228). Video Data Storage Area 20610c stores a plurality of video data which goes through the process described in Fig. 232a hereinafter. In the present example, six video data, i.e., Video #1, Video #2, Video #3, Video #4, Video #5, and Video #6, are currently stored in Video Data Storage Area 20610c. Message Data Storage Area (MS2a, MS3a) 20610h is also included in Video Data Storage Area 20610c, which stores the text data of MS2a ('REC') and MS3a ('STOP') shown in Fig. 235 hereinafter.

[2234] Fig. 228b illustrates the data stored in Audio Data Storage

Area 20610d (Fig. 228). Audio Data Storage Area 20610d stores a plurality of audio data which goes through the process described in Fig. 232a hereinafter. In the present example, six audio data, i.e., Audio #1, Audio #2, Audio #3, Audio #4, Audio #5, and Audio #6 are currently stored in Audio Data Storage Area 20610d. Each audio data stored in Audio Data Storage Area 20610d corresponds to the video data stored in Video Data Storage Area 20610c (Fig. 228a). Namely, Video #1 corresponds to Audio #1, Video #2 corresponds to Audio #2, Video #3 corresponds to Audio #3, Video #4 corresponds to Audio #4, Video #5 corresponds to Audio #5, and Video #6 corresponds to Audio #6.

[2235] Fig. 228c illustrates the data stored in Photo Data Storage Area 20610e (Fig. 228). Photo Data Storage Area 20610e stores a plurality of photo data which goes through the process described in Fig. 240 hereinafter. In the present example, six photo data, i.e., Photo #1, Photo #2, Photo #3, Photo #4, Photo #5, and Photo #6 are currently stored in Photo Data Storage Area 20610e. Message Data Storage Area (MS4a) 20610i is also included in Photo Data Storage Area 20610e, which stores the text data of MS4a ('SHOT') shown in Fig. 239 hereinafter.

[2236] Fig. 229 illustrates the data stored in Indicator Data Storage Area 20610g (Fig. 228). Indicator Data Storage Area 20610g stores the data regarding the color of Indicator 212 (Figs. 1 and 225) when Communication Device 200 is in a video mode or a photo mode. According to the data described in Fig. 229, Indicator 212 emits red light when Communication Device 200 is in the video mode and green light when Communication Device 200 is in the photo mode.

[2237] Fig. 230 illustrates another example of the data stored in Indicator Data Storage Area 20610g (Fig. 228). According to the data described in Fig. 230, Indicator 212 emits a predetermined color, however, with a different pattern. Namely, the light emitted from Indicator 212 turns on and off when Communication Device 200 is in the video mode, whereas the light remains on when Communication Device 200 is in the photo mode.

[2238] Fig. 231 illustrates the software program stored in Video/Photo Software Storage Area 20610b (Fig. 228). As described in Fig. 231, CPU 211 (Fig. 1) displays a list of the selectable modes, i.e., the video mode and the photo mode (S1). One of the modes is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2).

[2239] Fig. 232 illustrates the software program stored in Video/Photo Software Storage Area 20610b (Fig. 228). When the video mode is selected in S2 in Fig. 231, the video mode is initiated and CPU 211 (Fig. 1) is ready to capture and store the video data in one of the areas of Video Data Storage Area 20610c (Fig. 228a) (S1). Next, the video process is initiated which is described in details in Fig. 232a (S2a) until a specific signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S3). The indicator process is activated simultaneously which is described in details in Fig. 233 hereinafter (S2b).

[2240] Fig. 232a illustrates the video process of Communication Device 200, i.e., S2a of Fig. 232. As described in Fig. 232a, the video data input from CCD Unit 214 (Figs. 1 and 225) (S1a) is converted from analog data to digital data (S2a) and is processed by Video Processor 202 (Fig. 1) (S3a). The processed video data is stored in Video Data Storage Area 20610c (Fig. 228a) (S4a) and is displayed on LCD 201 (Fig. 1) (S5a). As described in the same drawing, the audio data input from Microphone 215 (Fig. 1) (S1b) is converted from analog data to digital data by A/D 213 (Fig. 1) (S2b) and is processed by Sound Processor 205 (Fig. 1) (S3b). The processed audio data is stored in Audio

Data Storage Area 20610d (Fig. 228b) (S4b) and is transferred to Sound Processor 205 and is output from Speaker 216 (Fig. 1) via D/A 204 (Fig. 1) (S5b). The sequences of S1a through S5a and S1b through S5b are continued until a specific signal indicating to stop such sequence is input from Input Device 210 (Fig. 1) or by the voice recognition system (S6).

[2241] Fig. 233 illustrates the indicator process of Communication Device 200, i.e., S2b of Fig. 232. As described in Fig. 233, CPU 211 (Fig. 1) scans the video mode section of Indicator Data Storage Area 20610g (Fig. 229) and retrieves the indicator data therefrom (S1) and activates Indicator 212 (Figs. 1 and 225) in accordance with the indicator data (S2). In the embodiment explained in Fig. 229, Indicator 212 emits red light while Communication Device 200 is in the video mode and Indicator 212 turns on and off in the embodiment explained in Fig. 230. The sequences of S1 and S2 is continued until a specific signal indicating to stop such sequence is input from Input Device 210 (Fig. 1) or by the voice recognition system (S3).

[2242] Fig. 233a illustrates the sequence to transfer the video data and the audio data via Antenna 218 (Fig. 1) in a wireless fashion. As described in Fig. 233a, CPU 211 (Fig. 1)

initiates a dialing process (S1) until the line is connected to a host (not shown) (S2). As soon as the line is connected, CPU 211 reads the video data and the audio data stored in Video Data Storage Area 20610c (Fig. 228a) and Audio Data Storage Area 20610d (Fig. 228b) (S3) and transfers these data to Signal Processor 208 (Fig. 1) where these data are converted into a transferring data (S4). The transferring data is transferred from Antenna 218 (Fig. 1) in a wireless fashion (S5). The sequence of S1 through S5 is continued until a specific signal indicating to stop such sequence is input from Input Device 210 (Fig. 1) or via the voice recognition system (S6). The line is disconnected thereafter (S7).

[2243] Fig. 233b illustrates the basic structure of the transferred data which is transferred from Communication Device 200 as described in S4 and S5 of Fig. 233a. Transferred Data 610a is primarily composed of Header 611a, Video Data 612a, Audio Data 613a, Relevant Data 614a, and Footer 615a. Video data 612a corresponds to the video data stored in Video Data Storage Area 20610c (Fig. 228a), and Audio Data 613a corresponds to the audio data stored in Audio Data Storage Area 20610d (Fig. 228b). Relevant Data 614a includes various types of data, such as the

identification numbers of Device A (i.e., the transferor device) and Device B (i.e., the transferee device), a location data which represents the location of Device A, an email data transferred from Device A to Device B, etc. Header 611a and Footer 615a represent the beginning and the end of Transferred Data 610a respectively.

[2244] Fig. 233c illustrates the data contained in RAM 206 (Fig. 1) of Device B (i.e., the transferee device). As illustrated in Fig. 233c, RAM 206 includes Area 269a which stores video data, Area 270a which stores audio data, and Area 266a which is a work area utilized for the process explained hereinafter.

[2245] Figs. 233d and 233e illustrates the software program stored in Device B. As described in Figs. 233d and 233e, CPU 211 (Fig. 1) of Device B initiates a dialing process (S1) until Device B is connected to a host (not shown) (S2). Transferred Data 610a is received by Antenna 218 (Fig. 1) of Device B (S3) and is converted by Signal Processor 208 (Fig. 1) into data readable by CPU 211 (S4). Video data and audio data are retrieved from Transferred Data 610a and stored into Area 269a (Fig. 233c) and Area 270a (Fig. 233c) of RAM 206 respectively (S5). The video data stored in Area 269a is processed by Video Processor 202 (Fig. 1)

(S6a). The processed video data is converted into an analog data (S7a) and displayed on LCD 201 (Fig. 1) (S8a). S7a may not be necessary depending on the type of LCD 201 used. The audio data stored in Area 270a is processed by Sound Processor 205 (Fig. 1) (S6b). The processed audio data is converted into analog data by D/A 204 (Fig. 1) (S7b) and output from Speaker 216 (Fig. 1) (S8b). The sequences of S6a through S8a and S6b through S8b are continued until a specific signal indicating to stop such sequence is input by utilizing Input Device 210 (Fig. 1) or via the voice recognition system (S9).

[2246] As described in Fig. 234, Message MS1a is shown at the upper right corner of LCD 201 (Fig. 1) indicating that a new email has arrived while video/photo mode is implemented.

[2247] Fig. 234a illustrates the data stored in Email Data Calculating Area 206c (Fig. 99) and Email Data Storage Area 206d (Fig. 99) in order to implement the incoming message function. Email Data Calculating Area 206c includes Incoming Message Calculating Area 206k which stores a software program described in Fig. 234b hereinafter, and Email Data Storage Area 206d includes Message Data Storage Area (MS1a) 206ma which stores the text data of

MS1a (in the present example, the text data 'Email' as shown in Fig. 234).

[2248] Fig. 234b illustrates the software program stored in Incoming Message Calculating Area 206k (Fig. 234a). First of all, CPU 211 (Fig. 1) checks whether a new incoming message has arrived by scanning Email Data Storage Area 206d (Fig. 234a) (S1). If a new message has arrived (S2), CPU 211 retrieves the text data (MS1a) from Message Data Storage Area (MS1a) 206ma and displays on LCD 201 (Fig. 1) as described in Fig. 234 for a specified period of time (S3). The software program is executed periodically with a fixed interval.

[2249] As described in Fig. 235, Message MS2a is shown on LCD 201 (Fig. 1) when the video recording function is implemented, and Message MS3a is shown when the implementation of the video recording function has been terminated.

[2250] Fig. 236 illustrates the software program stored in Video/Photo Software Storage Area 20610b (Fig. 228) to display messages MS2a and MS3a on LCD 201 (Fig. 1) described in Fig. 235. When a start recording signal has been input by utilizing Input Device 210 (Fig. 1) or via voice recognition system, CPU 211 (Fig. 1) initiates the recording pro-

cess, i.e., the process described in Fig. 232a hereinbefore (S1). During the recording process, the text data of Message MS2a is retrieved from Message Data Storage Area (MS2a, MS3a) 20610h (Fig. 228a) and displayed at the upper right corner of LCD 201 (Fig. 1) as described in Fig. 235 indicating that the video recording function is in process (S2). If the stop recording signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system indicating to stop the video recording process (S3), CPU 211 stops the video recording process (S4), and retrieves the text data of Message MS3a from Message Data Storage Area (MS2a, MS3a) 20610h and displays at the upper right corner of LCD 201 as shown in Fig. 235 for a specified period of time (S5). Since Video Data Storage Area 20610c and Audio Data Storage Area 20610d are divided into several sectors as stated above, a plurality of software program described in Fig. 236 can be activated to record and store a plurality of video data and the corresponding audio data simultaneously.

[2251] Fig. 237 illustrates the software program stored in Video/Photo Software Storage Area 20610b (Fig. 228) to playback the recorded video data and the corresponding audio data. First, a video data is selected and playback signal is

input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). Once these signals are received, CPU 211 (Fig. 1) initiates the playback process of the recorded video data, i.e., CPU 211 retrieves the selected video data from Video Data Storage Area 20610c (Fig. 228a) and the corresponding audio data from Audio Data Storage Area 20610d (Fig. 228b), and Video Processor 202 (Fig. 1) processes the channel data to be displayed on LCD 201 (Fig. 1) (S2). This playback process continues until a stop playback signal is input by utilizing Input Device 210 or via voice recognition system (S3). When a stop playback signal is input by utilizing Input Device 210 or via voice recognition system, CPU 211 stops the foregoing process, and retrieves the text data of Message MS3a from Message Data Storage Area (MS2a, MS3a) 20610h (Fig. 228a) and displays at the upper right corner of LCD 201 as shown in Fig. 235 for a specified period of time (S4).

[2252] Fig. 238 illustrates the software program stored in Video/Photo Software Storage Area 20610b (Fig. 228). When the photo mode is selected in S2 in Fig. 231, the photo mode is initiated and CPU 211 (Fig. 1) is ready to capture and store the photo data in one of the areas of Photo Data Storage Area 20610e (Fig. 228c) (S1). Next, the photo

process is initiated which is described in details in Fig. 240 (S2a) until a specific signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S3). The indicator process is activated simultaneously which is described in details in Fig. 242 hereinafter (S2b).

[2253] As described in Fig. 239, Message MS4a is shown on LCD 201 (Fig. 1) when a photo is taken with Communication Device 200.

[2254] Fig. 240 illustrates the software program stored in Video/Photo Software Storage Area 20610b (Fig. 228) to implement the photo mode. When a start recording signal has been input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1), CPU 211 (Fig. 1) initiates the recording process, i.e., retrieves an image data input from CCD Unit 214 (Fig. 1), which is currently displayed on LCD 201 (Fig. 1), and stores in one of the sectors of Photo Data Storage Area 20610e (Fig. 228c), for example Photo #1 described in Fig. 228c (S2). CPU 211 retrieves the text data of Message MS4a from Message Data Storage Area (MS4a) 20610i (Fig. 228c) and displays at the upper right corner of LCD 201 (Fig. 1) as described in Fig. 239 for a specific period of time indicating that a photo data has been taken and stored (S3). Then CPU 211 re-

trieves the photo data which is just stored in Photo Data Storage Area 20610e, and Video Processor 202 (Fig. 1) processes the photo data to be displayed on LCD 201 (Fig. 1) for a specific period of time (S4). Since Photo Data Storage Area 20610e is divided into several sectors as stated above, S1 from S4 can be repeated to record and store a plurality of image data.

[2255] Fig. 241 illustrates the software program stored in Video/Photo Software Storage Area 20610b (Fig. 228) to display the recorded photo data. First, a photo data is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). When this signal is received, CPU 211 (Fig. 1) initiates the display process of the recorded photo data, i.e., CPU 211 retrieves the selected photo data from Photo Data Storage Area 20610e, for example Photo #1 described in Fig. 228c, and Video Processor 202 (Fig. 1) processes the selected photo data to be displayed on LCD 201 (Fig. 1) (S2). The photo data is displayed until a close signal is input by utilizing Input Device 210 or via voice recognition system (S3). When a close signal is input by utilizing Input Device 210 or via voice recognition system, CPU 211 terminates to display the photo data (S4).

[2256] Fig. 242 illustrates the software program stored in Video/

Photo Software Storage Area 20610b (Fig. 228) which implements the indicator process of Communication Device 200, i.e., S2b of Fig. 238. As described in Fig. 242, CPU 211 (Fig. 1) scans the photo mode section of Indicator Data Storage Area 20610g (Fig. 229) and retrieves an indicator data therefrom (S1) and activate Indicator 212 (Figs. 1 and 225) in accordance with the indicator data (S2). In the embodiment explained in Fig. 229, Indicator 212 emits green light while Communication Device 200 is in the photo mode and Indicator 212 remains to be on in the embodiment explained in Fig. 230. The sequence of S1 through S2 is continued until a specific signal indicating to stop such sequence is input from Input Device 210 (Fig. 1) or by the voice recognition system (S3).

[2257] *<<Call Taxi Function>>*

[2258] Figs. 243 through 269 illustrate the call taxi function of Communication Device 200, i.e., the function to call taxi by way of utilizing Communication Device 200.

[2259] Fig. 243 illustrates the relationship of each element required to implement the present function. As described in Fig. 243, Communication Device 200 is connected to Host H via Network NT, such as the Internet. Host H is connected to a plurality of Taxi Tx in a wireless fashion.

[2260] Fig. 243a illustrates the software program installed in Communication Device 200 to initiate the present function. First of all, a list of modes is displayed on LCD 201 (Fig. 1) (S1). When an input signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system to select a specific mode (S2), the selected mode is activated. In the present example, the communication mode is activated (S3a) when the communication mode is selected in the previous step, the game download mode and the game play mode are activated (S3b) when the game download mode and the game play mode are selected in the previous step of which the details are described in Fig. 137, and the call taxi function is activated (S3c) when the call taxi function is selected in the previous step. The modes displayed on LCD 201 in S1 which are selectable in S2 and S3 may include all functions and modes explained in this specification. Once the selected mode is activated, another mode can be activated while the first activated mode is still implemented by going through the steps of S1 through S3 for another mode, thereby enabling a plurality of functions and modes being performed simultaneously (S4).

[2261] Fig. 243b illustrates the data stored in RAM 206 (Fig. 1).

As described in Fig. 243b, the data to activate (as described in S3a of the previous figure) and to perform the communication mode is stored in Communication Data Storage Area 2061a, the data to activate (as described in S3b of the previous figure) and to perform the game download mode and the game play mode are stored in Game DL/Play Data Storage Area 2061b/2061c of which the details are described in Fig. 138, and the data to activate (as described in S3c of the previous figure) and to perform the call taxi function is stored in Call Taxi Information Storage Area 20611a.

[2262] Figs. 243c and 243d illustrate the sequence of display shown on LCD 201 (Fig. 1). First of all, a menu screen is shown on LCD 201 (S1) from which the user of Communication Device 200 activates the call taxi function as described in S2 of Fig. 243a by selecting the icon 'Call Taxi Function' displayed on LCD 201 (S2). When the call taxi function is activated, a prompt to identify the pick up location is displayed on LCD 201 (S3a). The user of Communication Device 200 may choose the pick up location by selecting one of the two options displayed on LCD 201 as described in S3a. The current location of Communication Device 200 is determined as the pick up location if '#

Current Location' is selected. If, on the other hand, '# Choose Location' is selected, a 3D map which covers about 3 mile radius from the current position is displayed on LCD 201 from which the pick up location is selected by pinpointing the desired location to be picked up by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S3b). Next, the time to pick up is determined by selecting one of the options as described in S4 (Fig. 243d). Here, three fixed options are displayed, i.e., '# 5 min later', '# 10 min later', and '# 30 min later'. The pick up time is calculated as the current time plus 5 minutes if the first option is chosen. The pick up time is calculated as the current time plus 10 minutes if the second option is chosen. The pick up time is calculated as the current time plus 30 minutes if the third option is chosen. The pick up time may also be determined by selecting the fourth option ('#______ min later') and input a desired figure into the blank by Input Device 210 or via voice recognition system. The number of the passengers is determined by selecting one of the four fixed options (#1, #2, #3, #4) or by selecting the fifth option and input a desired figure into the blank by input devise 210 or via voice recognitions system (S5). A prompt to determine the destination

is displayed on LCD 201 as the last step (S6). The street address to which the user of Communication Device 200 is intending to go is typed into the blank by Input Device 210 or via voice recognition system. Or as another embodiment, a 3D map may be displayed on LCD 201 and the user may pinpoint the location thereon.

[2263] Fig. 243e illustrates the software program stored in Host H (Fig. 243). As described in Fig. 243e, Host H includes Host Call Taxi Software Storage Area H11a which stores the software program to be downloaded by Communication Device 200 to implement the call taxi function.

[2264] Fig. 244 illustrates the sequence of Communication Device 200 to download the software program stored in Host Call Taxi Software Storage Area H11a (Fig. 243e). As described in Fig. 244, Communication Device 200 connects to Host H (Fig. 243) (S1). Once a connection is established in a wireless fashion via Network NT (Fig. 243), the software program stored in Host Call Taxi Software Storage Area H11a is downloaded to Communication Device 200 (S2). The downloaded software program is then decompressed and stored in the area specified in Fig. 244a hereinafter (S3).

[2265] Fig. 244a illustrates the software programs and data

stored in Call Taxi Information Storage Area 20611a (Fig. 243b). As described in Fig. 244a, Call Taxi Information Storage Area 20611a includes Call Taxi Software Storage Area 20611b and Call Taxi Data Storage Area 20611c. Here, Call Taxi Software Storage Area 20611b stores a series of software programs downloaded from Host Call Taxi Software Storage Area H11a (Fig. 243e) which are explained in details hereinafter, and Call Taxi Data Storage Area 20611c stores the data required to execute a series of software programs and to implement the call taxi function which are also explained in details hereinafter.

[2266] Fig. 245 illustrates one of the software programs stored in Call Taxi Software Storage Area 20611b (Fig. 244a) to activate the call taxi function. As described in S1 of Fig. 243c, a menu screen is shown on LCD 201 under the control of CPU 211 (Fig. 1) from which the user of Communication Device 200 activates the call taxi function as described in S2 of Fig. 243a (S1). Next, CPU 211 activates the call taxi function when the icon 'Call Taxi Function' displayed on LCD 201 described in S2 of Fig. 243c is selected (S2).

[2267] Fig. 246 illustrates one of the software programs stored in Call Taxi Software Storage Area 20611b (Fig. 244a) which

determines a set of key information in order to call a taxi, i.e., the pick up location, the pick up time, the number of passengers, and the destination. As described in Fig. 246, CPU 211 (Fig. 1), first of all, executes the pick up location determination process (S1). Next, CPU 211 executes the pick up time determination process (S2). Thirdly, CPU 211 executes the passenger number determination process (S3). And fourthly, CPU 211 executes the destination determination process (S4). Each process is explained in details hereinafter. Each and every data produced in each step are stored in Call Taxi Data Storage Area 20611c (Fig. 244a).

[2268] Fig. 247 illustrates the software program to execute S1 ('Pick Up Location Determination Process') of Fig. 246. First, CPU 211 (Fig. 1) displays a pick up location prompt (S1) as described in S3a of Fig. 243c. If '# Current Location' is selected in S3a of Fig. 243c (S2), CPU 211 determines that the pick up location is the current geographic location of Communication Device 200 (S4b). The current geographic location of Communication Device 200 is calculated by GPS system explained hereinbefore. If '# Choose Location' is selected in S3a of Fig. 243c (S2), CPU 211 retrieves a 3D map stored in Call Taxi Data Storage

Area 20611c (Fig. 244a) which covers about 3 mile radius from the current position and displays on LCD 201 (Fig. 1) (S4a). The 3D map is downloaded from 3D Map Storage Area H11e of Host H (Fig. 243), which is explained in Fig. 254a hereinafter, when the software program stored in Host Call Taxi Software Storage Area H11a (Fig. 243e) is downloaded to Communication Device 200 as explained in Fig. 244 hereinbefore. Once a pick up location is selected by pinpointing the desired location to be picked up by Input Device 210 (Fig. 1) or via voice recognition system (S5), CPU 211 determines as the selected location to be the pick up location (S6).

[2269] Fig. 248 illustrates the software program to execute S2 ('Pick Up Time Determination Process') of Fig. 246. First of all, CPU 211 (Fig. 1) displays the four options on LCD 201 (Fig. 1), i.e., '# 5 min later', '# 10 min later', '# 30 min later', and '# _____ min later' as described in S4 of Fig. 243d (S1). Next, one of the four options is selected by Input Device 210 (Fig. 1) or via voice recognition system (S2). Here, CPU 211 determines the pick up time as the value of the current time plus 5 minutes if the first option is selected. CPU 211 determines the pick up time as the value of the current time plus 10 minutes if the second

option is selected. CPU 211 determines the pick up time as the value of the current time plus 30 minutes if the third option is selected. CPU 211 determines the pick up time as the value of the current time plus the figure input into the blank by Input Device 210 (Fig. 1) or via voice recognition system if the fourth option is selected.

[2270] Fig. 249 illustrates the software program to execute S3 ('Passenger Number Determination Process') of Fig. 246. First, CPU 211 (Fig. 1) displays the five options ('#1', '#2', '#3', '#4', and '# ____') as described in S5 of Fig. 243d. Next, one of the five options is selected by Input Device 210 (Fig. 1) or via voice recognition system (S2). Here, CPU 211 determines that the number of passengers is '1' if the first option is selected. CPU 211 determines that the number of passengers is '2' if the second option is selected. CPU 211 determines that the number of passengers is '3' if the third option is selected. CPU 211 determines that the number of passengers is '4' if the fourth option is selected. CPU 211 determines that the number of passengers is the figure input into the blank if the fifth option is selected.

[2271] Fig. 250 illustrates the software program to execute S4 ('Destination Determination Process') of Fig. 246. First,

CPU 211 displays a destination prompt with a blank into which the street address of the destination is input (S1). Next, the street address of the destination is input by Input Device 210 (Fig. 1) or via voice recognition system (S2). As another embodiment, a 3D map may be displayed on LCD 201 (Fig. 1) and the user may pinpoint the location thereon by Input Device 210 or via voice recognition system. The method to display a 3D map on LCD 201 is explained hereinbefore. As another embodiment, a list of destinations may be retrieved from RAM 206 (Fig. 1) and be displayed on LCD 201 and one of them may be selected by Input Device 210 or via voice recognition system.

[2272] Fig. 251 illustrates one of the software programs stored in Call Taxi Software Storage Area 20611b (Fig. 244a) to send the data produced in Figs. 246 through 250 to Host H (Fig. 243). First, Communication Device 200 is connected to Host H via Network NT (Fig. 243) in a wireless fashion (S1). CPU 211 (Fig. 1) then formats the data and sends to Host H via Antenna 218 (Fig. 1) as Taxi Inquiry Data TID which is explained in details in Fig. 252 hereinafter.

[2273] Fig. 252 illustrates the format of the Taxi Inquiry Data TID

described in S2 of Fig. 251. As described in Fig. 252, the Taxi Inquiry Data TID is composed of Header TID1, Caller ID TID2, Pick Up Location Data TID3, Pick Up Time Data TID4, Passenger Number Data TID5, Destination Data TID6, and Footer TID7. Here, Caller ID TID2 is an identification number of Communication Device 200 (e.g., the phone number designated thereto), Pick Up Location Data TID3 is the geographic location data produced by the software program described in Fig. 247, Pick Up Time Data TID4 is the data produced by the software program described in Fig. 248, Passenger Number Data TID5 is the data produced by the software program described in Fig. 249, Destination Data TID6 is the data produced by the software program produced in Fig. 250. Header TID1 and Footer TID7 represent the beginning and end of Taxi Inquiry Data TID respectively.

[2274] Fig. 253 illustrates the response of Host H (Fig. 243) when it receives Taxi Inquiry Data TID (Fig. 252). First, Host H periodically checks the incoming wireless signal (S1). If the incoming wireless signal is Taxi Inquiry Data TID (S2), Host H stores the data to Taxi Inquiry Data Storage Area H11c explained in Fig. 254a hereinafter (S3).

[2275] Fig. 254a illustrates the data stored in Host H (Fig. 243).

As described in Fig. 254a, Host H includes Taxi Data Storage Area H11b, Taxi Inquiry Data Storage Area H11c, Attribution Data Storage Area H11d, and 3D Map Storage Area H11e. Taxi data Storage Area H11b is explained in Fig. 254b hereinafter. Taxi Inquiry Data TID detected by the software program described in Fig. 253 is decompressed and stored into Taxi Inquiry Data Storage Area H11c. Attribution data Storage Area H11d stores a plurality of attribution data, such as data regarding roadblocks, traffic accidents, and road constructions, and traffic jams. The attribution data stored in Attribution Data Storage Area H1d is updated periodically. 3D Map Storage Area H11e stores a plurality of 3D maps which represent the sectors administered by Host H.

[2276] Fig. 254b illustrates the data stored in Taxi Data Storage Area H11b. As described in Fig. 254b, taxi data storage area H11b is categorized in certain fields, i.e., 'Taxi ID', 'Current Location', 'Status', 'Destination', 'Max Passenger #', 'Company', and 'Rate'. The field 'Taxi ID' represents the identification number of each taxi (e.g., license number). The field 'Current Location' represents the current geographical location of each taxi. The field 'Status' represents the current status of each taxi, i.e., whether vacant

or occupied. The field 'Destination' represents the geographical location representing the current destination of each taxi. The field 'Max Passenger #' represents the maximum passenger number which can be carried by each taxi at a time. The 'Company' represents the company name to which each taxi belongs. The 'Rate' represents the rate per mile charged by each taxi. Taking for example described in Fig. 254b, 'Taxi #1' is currently at the geographical location of 'x1, y1, z1', and the current status is 'Occupied'. Its destination is 'x9, y9, z9' (namely, 'Taxi #1' is currently on its way to destination 'x9, y9, z9') and the maximum passenger number capable to carry at a time is '4'. The company name to which it belongs is 'A Taxi Corp.' and the rate is '$2/mile'. With regard to 'Taxi #2', it is currently at the geographical location of 'x2, y2, z2', and the current status is 'Occupied'. Its destination is 'x10, y10, z10' (namely, 'Taxi #2' is currently on its way to destination 'x10, y10, z10') and the maximum passenger number capable to carry at a time is '4'. The company name to which it belongs is 'A Taxi Corp.' and the rate is '$2/mile'. With regard to 'Taxi #3', it is currently at the geographical location of 'x3, y3, z3', and the current status is 'Vacant'. Its destination is 'Null' since the current

status is 'Vacant', and the maximum passenger number capable to carry at a time is '4'. The company name to which it belongs is 'A Taxi Corp.' and the rate is '$2/mile'. With regard to 'Taxi #4', it is currently at the geographical location of 'x4, y4, z4', and the current status is 'Vacant'. Its destination is 'Null' since the current status is 'Vacant', and the maximum passenger number capable to carry at a time is '4'. The company name to which it belongs is 'A Taxi Corp.' and the rate is '$2/mile'. With regard to 'Taxi #5', it is currently at the geographical location of 'x5, y5, z5', and the current status is 'Occupied'. Its destination is 'x11, y11, z11' (namely, 'Taxi #5' is currently on its way to destination 'x11, y11, z11') and the maximum passenger number capable to carry at a time is '8'. The company name to which it belongs is 'B Taxi Corp.' and the rate is '$3/mile'. With regard to 'Taxi #6', it is currently at the geographical location of 'x6, y6, z6', and the current status is 'Occupied'. Its destination is 'x12, y12, z12' (namely, 'Taxi #6' is currently on its way to destination 'x12, y12, z12') and the maximum passenger number capable to carry at a time is '8'. The company name to which it belongs is 'B Taxi Corp.' and the rate is '$3/mile'. With regard to 'Taxi #7', it is currently at the geographical loca-

tion of 'x7, y7, z7', and the current status is 'Vacant'. Its destination is 'Null' since the current status is 'Vacant', and the maximum passenger number capable to carry at a time is '4'. The company name to which it belongs is 'B Taxi Corp.' and the rate is '$3/mile'. With regard to 'Taxi #8', it is currently at the geographical location of 'x8, y8, z8', and the current status is 'Vacant'. Its destination is 'Null' since the current status is 'Vacant', and the maximum passenger number capable to carry at a time is '4'. The company name to which it belongs is 'B Taxi Corp.' and the rate is '$3/mile'.

[2277] Fig. 255 illustrates the software program stored in Host H (Fig. 243) to select the five candidates from the taxi registered in the field 'Taxi ID' of Taxi Data Storage Area H11b (Fig. 254). First, Host H retrieves Caller ID TID2, Pick Up Location Data TID3, Pick Up Time Data TID4, Passenger Number Data TID5, and Destination Data TID6 from Taxi Inquiry Data Storage Area H11c (Fig. 254) (S1). By referring to the retrieved data, Host H scans Taxi Data Storage Area H11b and retrieves a plurality of taxis which match with the conditions stated therein (e.g., the requested passenger number to be carried -- Passenger Number Data TID5) (S2), and then selects the five taxis therefrom

which most match with the conditions (S3). Next, the estimated waiting time is calculated for the five selected taxis of which the details are explained in the next two drawings (S4). Prices of the five selected taxis are estimated by calculating, in the first place, the distance between the pick up location and the destination, and multiplying with the value stored in the field 'Rate' (S5). The best route from the pick up location to the destination is calculated (S6). Here, Host H takes into consideration the attribution data stored in Attribution Data Storage Area H11d (Fig. 254), such as data regarding road blocks, traffic accidents, road constructions, and traffic jams when calculating the best route. Once the sequence from S1 to S6 is completed, Host H forms and sends to Communication Device 200 via Antenna 218 (Fig. 1) in a wireless fashion Estimated Information Data EID, which is explained in Fig. 256 hereinafter (S7).

[2278] Figs. 255a illustrates the method of calculating the estimated waiting times for the five selected taxis described in S4 of Fig. 255 when the taxi is vacant, i.e., the field 'Status' of Taxi Data Storage Area H11b is 'Vacant'. When the taxi is vacant, the estimated waiting time is calculated by referring to the distance from the current location to

the pick up location (S1). For example, if 'Taxi #3' is selected as one of the selected five taxis in S3 of Fig. 255, the estimated waiting time is calculated by the method explained in Fig. 255a.

[2279] Figs. 255b illustrates the method of calculating the estimated waiting times for the five selected taxis described in S4 of Fig. 255 when the taxi is occupied, i.e., the field 'Status' of Taxi Data Storage Area H11b is 'Occupied'. When the taxi is occupied, first of all, the estimated waiting time of the taxi moving from the current location to the destination is calculated (S1). Next, the estimated waiting time of the taxi moving from the destination to the pick up location is calculated (S2). The two values derived from S1 and S2 are added (S3), and the sum is treated as the estimated waiting time for purposes of the present function. For example, if 'Taxi #1' is selected as one of the selected five taxis in S3 of Fig. 255, the estimated waiting time is calculated by the method explained in Fig. 255b.

[2280] Fig. 256 illustrates the content of Estimated Information Data EID, i.e., the data sent from Host H (Fig. 243) to Communication Device 200 as explained in S7 of Fig. 255. As described in Fig. 256, Estimated Information Data EID

is composed of Header EID1, Caller ID EID2, Host ID EID3, Estimated Waiting Time Data EID4, Estimated Price Data EID5, Estimated Best Route Data EID6, and Footer EID7. Here, Caller ID EID2 is the recipient of Estimated Information Data EID, Host ID EID3 is the sender of Estimated Information Data EID, Estimated Waiting Time Data EID4 is the data calculated in S4 of Fig. 255 for the five selected taxis, Estimated Price Data EID5 is the data calculated in S5 of Fig. 255 for the five selected taxis, Estimated Best Route Data EID6 is the data produced in S6 of Fig. 255. Header EID1 and Footer EID7 represent the beginning and end of Estimated Information Data EID respectively.

[2281] Fig. 257 illustrates one of the software programs stored in Call Taxi Software Storage Area 20611b (Fig. 244a) to display the components of Estimated Information Data EID (Fig. 256). As described in Fig. 257, CPU 211 (Fig. 1) periodically checks the incoming signal (S1). If the incoming signal is Estimated Information Data EID (S2), CPU 211 retrieves data therefrom and displays on LCD 201 (Fig. 1) the estimated waiting times and the estimated prices of the five selected taxis, and the estimated best route data from the pick up location to the destination (S3). One of the five selected taxis is selected (referred as 'Taxi TxS'

hereinafter) by Input Device 210 (Fig. 1) or via voice recognition system (S4). The identity of the taxi selected in S4 is sent to Host H (Fig. 243) (S5) as Call Taxi Data CTD, which is explained in Fig. 257a hereinafter.

[2282] Fig. 257a illustrates Call Taxi Data CTD sent from Communication Device 200 to Host H (Fig. 243) as explained in S5 of Fig. 257. As described in Fig. 257a, Call Taxi Data CTD is composed of Header CTD1, Host ID CTD2, Caller ID CTD3, Taxi ID CTD4, and Footer CTD5. Here, Host ID CTD2 is the recipient of Call Taxi Data CTD, Caller ID CTD3 is the sender of Call Taxi Data CTD, and Taxi ID CTD4 is the identification of Taxi TxS selected in S4 of Fig. 257. Header CTD1 and Footer CTD5 represent the beginning and end of Call Taxi Data CTD respectively.

[2283] Fig. 258 illustrates the response by Host H (Fig. 243) when Call Taxi Data CTD (Fig. 257a) is received. As described in Fig. 258, Host H periodically checks the incoming signal (S1). If the incoming signal is Call Taxi Data CTD (S2), Host H retrieves the identification of Taxi TxS (i.e., Taxi ID CTD4 in Fig. 257a) therefrom, and calculates the approaching route data (S3). The approaching route data is the data for the selected taxi to approach to the pick up location from its current location. Here, Host H

takes into consideration the attribution data stored in Attribution Data Storage Area H11d (Fig. 254), such as road blocks, traffic accidents, and road constructions, and traffic jams when calculating the approaching route data. Next, Host H sends to Taxi TxS the Pick Up Information Data (S4), the Estimated Information Data (S5), and the approaching route data (S6), each of which are explained in Figs. 259a, 259b, and 259c respectively hereinafter. After the foregoing sequence is completed, Host H changes the field 'Status' (Fig. 254b) of the selected taxi to 'Occupied' (S7).

[2284] Fig. 259a illustrates Pick Up Information Data PUID sent from Host H (Fig. 243) to Taxi TxS. As described in Fig. 259a, Pick Up Information Data PUID is composed of Header PUID1, Taxi ID PUID2, Host ID PUID3, Pick Up Location Data PUID4, Pick Up Time Data PUID5, Passenger Number Data PUID6, Destination Data PUID7, Caller ID PUID8, and Footer PUID9. Here, Taxi ID PUID2 is the recipient of Pick Up Information Data PUID, i.e., the identification of Taxi TxS, and Host ID PUID3 is the sender of Pick Up Information Data PUID. Pick up location data PUID4 is the geographic location data produced by the software program described in Fig. 247, which is identical to Pick

Up Location Data TID3 in Fig. 252, Pick Up Time Data PUID5 is the data produced by the software program described in Fig. 248, which is identical to Pick Up Time Data TID4 in Fig. 252, Passenger Number Data PUID6 is the data produced by the software program described in Fig. 249, which is identical to Passenger Number Data TID5 in Fig. 252, Destination Data PUID7 is the data produced by the software program produced in Fig. 250, which is identical to Destination Data TID6 in Fig. 252, and Caller ID PUID8 is an identification number of Communication Device 200 (e.g., the phone number designated thereto), which is identical to Caller ID TID2 in Fig. 252. Header PUID1 and Footer PUID9 represent the beginning and end of Pick Up Information Data PUID respectively.

[2285] Fig. 259b illustrates Estimated Information Data EIDa sent from Host H (Fig. 243) to Taxi TxS. As described in Fig. 259b, Estimated Information Data EIDa is composed of Header EIDa1, Taxi ID EIDa2, Host ID EIDa3, Estimated Waiting Time Data EIDa4, Estimated Price Data EIDa5, Estimated Best Route Data EIDa6, and Footer EIDa7. Here, Taxi ID EIDa2 is the recipient of Estimated Information Data EIDa, Host ID EIDa3 is the sender of Estimated Information Data EIDa, Estimated Waiting Time Data EIDa4 is

the data calculated in S4 of Fig. 255 for Taxi TxS, Estimated Price Data EIDa5 is the data calculated in S5 of Fig. 255 for Taxi TxS, and Estimated Best Route Data EIDa6 is the data produced in S6 of Fig. 255, which is identical to Best Route Data EID6 in Fig. 256. Header EIDa1 and Footer EIDa7 represent the beginning and end of Estimated Information Data EID respectively.

[2286] Fig. 259c illustrates Approaching Route Data ARD sent from Host H (Fig. 243) to TxS. As described in Fig. 259c, Approaching Route Data ARD is composed of Header ARD1, Taxi ID ARD2, Host ID ARD3, Approaching Route Data ARD4, and Footer ARD. Here, Taxi ID ARD2 is the recipient of Approaching Route Data ARD, Host ID ARD3 is the sender of Approaching Route Data ARD, and Approaching Route Data ARD4 is the data produced in S3 of Fig. 258. Header ARD1 and Footer ARD5 represent the beginning and end of Approaching Route Data ARD respectively.

[2287] Fig. 260 illustrates a software program stored in Taxi TxS which notifies Host H (Fig. 243) the current location of Taxi TxS. As described in Fig. 260, Taxi TxS periodically checks its current geographical location (S1). Taxi TxS then sends in a wireless fashion to Host H Taxi Current

Location Data TCLD which includes the current geographical location of which the details are described in Fig. 261 hereinafter (S2).

[2288] Fig. 261 illustrates Taxi Current Location Data TCLD sent from Taxi TxS to Host H (Fig. 243) explained in Fig. 260. As described in Fig. 261, Taxi Current Location Data TCLD is composed of Header TCLD1, Host ID TCLD2, Taxi ID TCLD3, Taxi Current Location Data TCLD4, and Footer TCLD5. Here, Host ID TCLD2 is the recipient of Taxi Current Location Data TCLD, Taxi ID TCLD3 is the sender of Taxi Current Location Data, and Taxi Current Location Data TCLD4 is the data produced in S1 of Fig. 260. Header TCLD1 and Footer TCLD5 represent the beginning and end of Taxi Current Location Data TCLD respectively.

[2289] Fig. 262 illustrates the response of Host H (Fig. 243) when receiving Taxi Current Location Data TCLD described in Fig. 261. As described in Fig. 262, Host H periodically checks the incoming signal (S1). If the incoming signal is Taxi Current Location Data TCLD (S2), Host H calculates and thereby updates the estimated waiting time based on the just received Taxi Current Location Data TCLD (S3). Host H then sends to Communication Device 200 Updated Taxi Current Information Data UTCID of which the details

area explained in Fig. 263 hereinafter (S4).

[2290] Fig. 263 illustrates Updated Taxi Current Information Data UTCID sent in S4 of Fig. 262. As described in Fig. 263, Updated Taxi Current Information Data UTCID is composed of Header UTCID1, Caller ID UTCID2, Host ID UTCID3, Taxi ID UTCID4, Taxi Current Location Data UTCID5, 3D Map UTCID6, Estimated Waiting Time Data UTCID7, and Footer UTCID8. Here, Caller ID UTCID2 is the recipient of Taxi Current Information Data UTCID, Host ID UTCID3 is the sender of Taxi Current Information Data UTCID, Taxi ID UTCID4 is the identification of Taxi TxS, Taxi Current Location Data UTCID5 is the current geographical location of Taxi TxS which is identical to Taxi Current Location Data TCLD4 in Fig. 261, 3D Map UTCID6, a three-dimensional map data, which is retrieved from 3D Map Storage Area H11e (Fig. 254) and which is designed to be displayed on LCD 201 (Fig. 1) to indicate current geographical location of Taxi TxS and the pick up location, and Estimated Waiting Time Data UTCID7 is the data produced in S3 of Fig. 262. Header UTCID1 and Footer UTCID8 represent the beginning and end of Updated Taxi Current Information Data UTCID respectively.

[2291] Fig. 264 illustrates one of the software programs stored in

Call Taxi Software Storage Area 20611b (Fig. 244a) which is executed when Updated Taxi Current Information Data UTCID (Fig. 263) is received. As described in Fig. 264, CPU 211 (Fig. 1) periodically checks the incoming signal (S1). If the incoming signal is Updated Taxi Current Information Data UTCID (S2), CPU 211 retrieves 3D Map UTCID6 therefrom and displays on LCD 201 (Fig. 1) (S3). Next, CPU 211 retrieves Taxi ID UTCID4, Taxi Current Location Data UTCID5, and Estimated Waiting Time Data UTCID7 and displays on LCD 201 (S4) with the current location of Communication Device 200 (S5).

[2292] Figs. 265 through 269 are of the explanations after Taxi TxS has arrived to the pick up location.

[2293] Fig. 265 illustrates a software program stored in Taxi TxS which notifies Host H (Fig. 243) the current location of Taxi TxS. As described in Fig. 265, Taxi TxS periodically checks its current geographical location (S1). Taxi TxS then sends to Host H Taxi Current Location Data TCLDa which includes the current geographical location of which the details are described in Fig. 266 hereinafter (S2).

[2294] Fig. 266 illustrates Taxi Current Location Data TCLDa sent from Taxi TxS to Host H (Fig. 243) explained in Fig. 265. As described in Fig. 266, Taxi Current Location Data

TCLDa is composed of Header TCLDa1, Host ID TCLDa2, Taxi ID TCLDa3, Taxi Current Location Data TCLDa4, and Footer TCLDa5. Here, Host ID TCLDa2 is the recipient of Taxi Current Location Data TCLDa, Taxi ID TCLDa3 is the sender of Taxi Current Location Data, and Taxi Current Location Data TCLDa4 is the data produced in S1 of Fig. 265. Header TCLDa1 and Footer TCLDa5 represent the beginning and end of Taxi Current Location Data TCLDa respectively.

[2295] Fig. 267 illustrates the response of Host H (Fig. 243) when receiving Taxi Current Location Data TCLDa described in Fig. 266. As described in Fig. 267, Host H periodically checks the incoming signal (S1). If the incoming signal is Taxi Current Location Data TCLDa (S2), Host H calculates and thereby updates the estimated waiting time based on the just received Taxi Current Location Data TCLDa (S3). Host H then sends to Communication Device 200 updated Estimated Destination Arrival Time Data UEDATD of which the details are explained in Fig. 268 hereinafter.

[2296] Fig. 268 illustrates updated Estimated Destination Arrival Time Data UEDATD sent in S4 of Fig. 267. As described in Fig. 268, updated Estimated Destination Arrival Time Data UEDATD is composed of Header UEDATD1, Caller ID UE-

DATD2, Host ID UEDATD3, Taxi ID UEDATD4, Taxi Current Location Data UEDATD5, 3D Map UEDATD6, Estimated Waiting Time Data UEDATD7, and Footer UEDATD8. Here, Caller ID UEDATD2 is the recipient of updated Estimated Destination Arrival Time Data UEDATD, Host ID UEDATD3 is the sender of updated Estimated Destination Arrival Time Data UEDATD, Taxi ID UEDATD4 is the identification of Taxi TxS, Taxi Current Location Data UEDATD5 is the current geographical location of Taxi TxS, 3D Map UE-DATD6 is a three-dimensional map data which is retrieved from 3D Map Storage Area H11e (Fig. 254) and which is designed to be displayed on LCD 201 (Fig. 1) to indicate current geographical location of Taxi TxS and the pick up location, and Estimated Waiting Time Data UEDATD7 is the data produced in S3 of Fig. 262. Header UEDATD1 and Footer UEDATD8 represent the beginning and end of up-dated Estimated Destination Arrival Time Data UEDATD respectively.

[2297] Fig. 269 illustrates one of the software programs stored in Call Taxi Software Storage Area 20611b (Fig. 244a) which is executed when updated Estimated Destination Arrival Time Data UEDATD (Fig. 268) is received. As described in Fig. 269, CPU 211 (Fig. 1) periodically checks the incom-

ing signal (S1). If the incoming signal is updated Estimated Destination Arrival Time Data UEDATD (S2), CPU 211 retrieves 3D Map UEDATD6 therefrom and displays on LCD 201 (Fig. 1) (S3). Next, CPU 211 retrieves Taxi ID UEDATD4, Taxi Current Location Data UEDATD5, and Estimated Destination Arrival Time Data UEDATD7 and displays on LCD 201 (S4) with the current location of Communication Device 200 (S5).

[2298] *<<Shooting Video Game Function>>*

[2299] Figs. 270 through 283 illustrate the shooting video game function of Communication Device 200 which enables the user ofto enjoy a 'shooting video game' by the implementation thereof.

[2300] Fig. 270 illustrates the typical image displayed on LCD 201 (Fig. 1) at the time the shooting video game function is implemented. As described in Fig. 270, primarily four types of objects are displayed on LCD 201, i.e., CPU Controlled Object CCO, User Controlled Object UCO, User Fired Bullet UFB, and CPU Fired Bullet CFB. Here, CPU Controlled Object CCO is a three-dimensional object of which the movement is controlled by CPU 211 (Fig. 1) and which is not controllable by the operation of the user of Communication Device 200. CPU Controlled Object CCO is pri-

marily programmed to 'attack' User Controlled Object UCO. In the example described in Fig. 270, two CPU Controlled Object CCOs are displayed on LCD 201. User Controlled Object UCO is a three-dimensional object of which the movement is controlled by user of Communication Device 200. User Fired Bullet UFB is a three-dimensional object which is fired from User Controlled Object UCO to primarily 'attack' CPU Controlled Object CCO or defend User Controlled Object UCO therefrom. User Fired Bullet UFB is fired by the operation of the user of Communication Device 200. CPU Fired Bullet CFB is a three-dimensional object which is fired from CPU Controlled Object CCO to primarily 'attack' User Controlled Object UCO or defend CPU Controlled Object CCO therefrom. CPU Fired Bullet CFB is fired under the operation of CPU 211 and is not controllable by the operation of the user of Communication Device 200.

[2301] Fig. 271 illustrates the data transferred from Host H (Fig. 136) to Communication Device 200, i.e., Transferred Shooting Game Data TSGD in a wireless fashion, which is stored in Game DL Data Storage Area 2061b (Fig. 138). As described in Fig. 271, Transferred Shooting Game Data TSGD is primarily composed of Header TSGD1, Shooting

Video Game Program TSGD2, Object Image Data TSGD3, Background Image Data TSGD4, Sound Data TSGD5, and Footer TSGD6. Here, Shooting Video Game Program TSGD2 is a package of software programs which is decompressed and stored in Game Software Storage Area 2061d (Fig. 141) wherein each software program is explained in details in Figs. 272 through 283. Object Image Data TSGD3 is a package of data regarding the three-dimensional objects, such as CPU Controlled Object CCO, User Controlled Object UCO, User Fired Bullet UFB, and CPU Fired Bullet CFB described in Fig. 270. Background Image Data TSGD4 is a package of data regarding the two-dimensional and/or three-dimensional image data to display Background BKG described in Fig. 270. Sound data TSGD5 is a package of sound data which is designed to be output from Speaker 216 (Fig. 1). Header TSGD1 and Footer TSGD6 represent the beginning and end of Transferred Shooting Game Data TSGD respectively.

[2302] Figs. 136 through 141, and Fig. 143 apply to implement the shooting video game function. More precisely, the present function is one of the games stored in Host Game Data Storage Area Ha (Fig. 136) which is selected and downloaded as described in Fig. 140.

[2303] Figs. 143 and 272 illustrate the process to allocate Input Device 210 (Fig. 1) to implement the shooting video game function. As described in Fig. 143, when the game initiation process is initiated as explained in S1 of Fig. 142, the key allocation process is initiated simultaneously. As the result of the key allocation process, Input Device 210 normally utilized for communication purposes, including a keypad and buttons, is allocated as input means for performing the shooting video game function. In the example described in Fig. 272, Key #1 is assigned for instructing CPU 211 (Fig. 1) to move up User Controlled Object UCO (Fig. 270), Key #2 is assigned for instructing CPU 211 to move down User Controlled Object UCO, Key #3 is assigned for instructing CPU 211 to move forward User Controlled Object UCO, Key #4 is assigned for instructing CPU 211 to move backward User Controlled Object UCO, and Key #5 is assigned for instructing CPU 211 to fire User Fired Bullet UFB, and all the foregoing data are stored in Key Allocation Data Storage Area 2061h.

[2304] Fig. 273 illustrates the overall process of the software program stored in Game Software Storage Area 2061d (Fig. 141). As described in Fig. 273, CPU 211 (Fig. 1) displays one or more of CPU Controlled Object CCOs (Fig.

270) on LCD 201 (Fig. 1) (S1). CPU 211 displays CPU Controlled Object CCO by retrieving the three-dimensional data regarding its shape and all parts thereof stored in 3D Object Data Storage Area 2061e (Fig. 141), and by 'pasting' the relevant textures thereto stored in Texture Data Storage Area 2061f (Fig. 141). User Controlled Object UCO (Fig. 270) (S2) and Background BKG (Fig. 270) (S3) are also displayed on LCD 201 in the same manner by retrieving data from 3D Object Data Storage Area 2061e and Texture Data Storage Area 2061f.

[2305] Fig. 274 illustrates the software program stored in Game Software Storage Area 2061d (Fig. 141) to move User Controlled Object UCO (Fig. 270) displayed on LCD 201 (Fig. 1). First of all, the user of Communication Device 200 manipulates Input Device 210 (Fig. 1), and the input control signal produced therefrom is transferred to CPU 211 (Fig. 1) (S1). CPU 211 then moves User Controlled Object UCO displayed on LCD 201in accordance to the input control signal by referring to Key Allocation Data Storage Area 2061h (Fig. 272) (S2). For example, CPU 211 moves up User Controlled Object UCO (Fig. 270) when the input control signal representing Key #1 is transferred to CPU 211, CPU 211 moves down User Controlled Object UCO

(Fig. 270) when the input control signal representing Key #2 is transferred to CPU 211, CPU 211 moves forward User Controlled Object UCO (Fig. 270) when the input control signal representing Key #3 is transferred to CPU 211, and CPU 211 moves backward User Controlled Object UCO (Fig. 270) when the input control signal representing Key #4 is transferred to CPU 211.

[2306] Fig. 275 illustrates the software program stored in Game Software Storage Area 2061d (Fig. 141) to move CPU Controlled Object CCO (Fig. 270) displayed on LCD 201 (Fig. 1). CPU 211 (Fig. 1) moves CPU Controlled Object CCO in the predetermined manner written in Game Software Storage Area 2061d (S1). Unlike User Controlled Object UCO (Fig. 270), CPU Controlled Object CCO is not controllable by the operation of the user of Communication Device 200.

[2307] Fig. 276 illustrates the software program stored in Game Software Storage Area 2061d (Fig. 141) to display User Fired Bullet UFB (Fig. 270) on LCD 201 (Fig. 1). First of all, the user of Communication Device 200 manipulates Input Device 210 (Fig. 1) and the input firing signal produced therefrom is transferred to CPU 211 (Fig. 1) (S1). CPU 211 then initiates the user fired bullet process which is ex-

plained in details in Fig. 277 hereinafter (S2).

[2308] Fig. 277 illustrates the user fired bullet process described in S2 of Fig. 276. When user fired bullet process is initiated, CPU 211 (Fig. 1), first of all, determines the direction of User Fired Bullet UFB (Fig. 270) to which it is fired (S1). CPU 211 then displays User Fired Bullet UFB on LCD 201 (Fig. 1) (S2), and moves it with the predetermined velocity to the direction determined in S1 (S3).

[2309] Fig. 278 illustrates the software program stored in Game Software Storage Area 2061d (Fig. 141) to determine whether User Fired Bullet UFB (Fig. 270) has hit one of CPU Controlled Object CCOs (Fig. 270) displayed on LCD 201 (Fig. 1). First of all, CPU 211 (Fig. 1) calculates the current position of User Fired Bullet UFB (S1), and then calculates the current position of each of CPU Controlled Object CCO (S2). If the two values produced from S1 and S2 match (S3), CPU 211 initiates the hit program of which the details are explained in Fig. 279 hereinafter (S4).

[2310] Fig. 279 illustrates the hit program described in S4 of Fig. 278. When hit program is initiated, CPU 211 (Fig. 1), first of all, displays an explosion image on LCD 201 (Fig. 1) by reading the three-dimensional data of User Fired Bullet UFB from 3D Object Data Storage Area 2061e (Fig. 141)

and by 'pasting' the relevant textures thereto stored in Texture Data Storage Area 2061f (Fig. 141) (S1). Next, CPU 211 erases the image of CPU Controlled Object CCO (Fig. 270) from LCD 201 (S2), and also the explosion image thereafter (S3).

[2311] Fig. 280 illustrates the software program stored in Game Software Storage Area 2061d (Fig. 141) to display CPU Fired Bullet CFB (Fig. 270) on LCD 201 (Fig. 1). As described in Fig. 280, S1 of Fig. 276 (i.e., the user of Communication Device 200 manipulating Input Device 210 (Fig. 1) and the input firing signal produced therefrom being transferred to CPU 211 (Fig. 1)) is omitted when CPU Controlled Object CCO (Fig. 270) fires CPU Fired Bullet CFB. CPU 211(Fig. 1) initiates the CPU fired bullet process which is explained in details in Fig. 281hereinafter (S1).

[2312] Fig. 281 illustrates the CPU fired bullet process described in S1 of Fig. 280. When CPU Fired Bullet CFB (Fig. 270) process is initiated, CPU 211 (Fig. 1), first of all, determines the direction of CPU Fired Bullet CFB to which it is fired (S1). CPU 211 then displays CPU Fired Bullet CFB on LCD 201 (Fig. 1) (S2), and moves it with the predetermined velocity to the direction determined in S1 (S3).

[2313] Fig. 282 illustrates the software program stored in Game

Software Storage Area 2061d (Fig. 141) to determine whether CPU Fired Bullet CFB (Fig. 270) has hit User Controlled Object UCO (Fig. 270) displayed on LCD 201 (Fig. 1). First of all, CPU 211 (Fig. 1) calculates the current position of CPU Fired Bullet CFB (S1), and then calculates the current position of User Controlled Object UCO (S2). If the two values produced from S1 and S2 match (S3), CPU 211 initiates the hit program of which the details are explained in Fig. 283 hereinafter (S4).

[2314] Fig. 283 illustrates the hit program described in S4 of Fig. 282. When hit program is initiated, CPU 211 (Fig. 1), first of all, displays an explosion image on LCD 201 (Fig. 1) by reading the three-dimensional data of CPU Fired Bullet CFB from 3D Object Data Storage Area 2061e (Fig. 141) and by 'pasting' the relevant textures thereto stored in Texture Data Storage Area 2061f (Fig. 141) (S1). Next, CPU 211 erases the image of User Controlled Object UCO (Fig. 270) from LCD 201 (S2), and also the explosion image thereafter (S3).

[2315] *<<Driving Video Game Function>>*

[2316] Figs. 284 through 294 illustrate the driving video game function of Communication Device 200. The user of Communication Device 200 is enabled to enjoy a 'driving video

game' by the implementation of this function.

[2317] Fig. 284 illustrates the typical image displayed on LCD 201 (Fig. 1) at the time the driving video game function is implemented. As described in Fig. 284, primarily two types of cars are displayed on LCD 201, i.e., CPU Controlled Car CCC and User Controlled Car UCC. Here, CPU Controlled Car CCC is a three-dimensional image of a car of which the movement is controlled by CPU 211 (Fig. 1) and which is not controllable by the operation of the user of Communication Device 200. CPU Controlled Car CCC is primarily programmed to race with User Controlled Car UCC. Two CPU Controlled Car CCCs are displayed on LCD 201 in the example described in Fig. 284. User Controlled Car UCC is a three-dimensional image of a car of which the movement is controlled by the user of Communication Device 200. In Fig. 284, Street Image STIm is a series of images of the circuit on which both CPU Controlled Car CCC and User Controlled Car UCC are programmed to travel. Background Image BGIm is a series of images of the background displayed on LCD 201, such as, but not limited to, spectators, clouds, and trees.

[2318] Fig. 285 illustrates the data transferred from Host H to Communication Device 200, i.e., Transferred Driving

Game Data TDGD in a wireless fashion, which is stored in Game DL Data Storage Area 2061b (Fig. 138). As described in Fig. 285, Transferred Driving Game Data TDGD is primarily composed of Header TDGD1, Driving Video Game Program TDGD2, Driving Video Game Parameter TDGD3, Object Image Data TDGD4, Background Image Data TDGD5, Street Image Data TDGD6, Sound Data TDGD7, and Footer TDGD8. Here, Driving Video Game Program TDGD2 is a package of software programs which is decompressed and stored in Game Software Storage Area 2061d (Fig. 141) wherein each software program is explained in details hereinafter. Driving Video Game Parameter TDGD3 is a package of parameters which is decompressed and stored in Game Process Data Storage Area 2061g (Fig. 141). Object Image data TDGD4 is a package of data regarding the three-dimensional objects, such as CPU Controlled Object CCO and User Controlled Object UCO described in Fig. 284. Background Image Data TDGD5 is a package of data regarding the two-dimensional and/or three-dimensional image data to display Background Image BGIm (Fig. 284), such as spectators, clouds, and trees. Street Image Data TDGD6 is a package of data regarding the two-dimensional and/or

three-dimensional image data to display the surface of the circuit, Street Image STIm (Fig. 284), on which CPU Controlled Car CCC (Fig. 284) and User Controlled Car UCC (Fig. 284) travel. Header TDGD1 and Footer TDGD8 represent the beginning and end of Transferred Driving Game Data TDGD respectively.

[2319] Figs. 136 through 141, and 143 apply to implement the driving video game function. More precisely, the present function is one of the games stored in Host Game Data Storage Area Ha (Fig. 136).

[2320] Fig. 286 illustrates the data stored in Game Process Data Storage Area 2061g (Fig. 141). As described in Fig. 286, Game Process Data Storage Area 2061g includes three storage areas, i.e., CPU Controlled Car Parameter Storage Area 2061g1, Street Parameter Storage Area 2061g2, and Background Parameter Storage Area 2061g3. CPU Controlled Car Parameter Storage Area 2061g1 stores a set of parameters for each CPU Controlled Car CCC (Fig. 284) displayed on LCD 201 (Fig. 1), such as the maximum speed and the cornering capability thereof. Street parameter storage Area 2061g2 stores a set of parameters regarding the road condition of the circuit, i.e., Street Image STIm (Fig. 284) displayed on LCD 201. For example, some

sections of the circuit are slippery due to the parameter which makes the user of Communication Device 200 difficult to steer the wheel of User Controlled Car UCC (Fig. 284). Background parameter storage Area 2061g3 stores a set of parameters regarding the Background Image BGIm (Fig. 284), such as the climate, the number of spectators, the number of clouds, and the number of trees displayed on LCD 201.

[2321] Figs. 143 and 287 illustrate the process to allocate Input Device 210 (Fig. 1) to implement the driving video game function. As described in Fig. 143, when the game initiation process is initiated as explained in S1 of Fig. 142, the key allocation process is initiated simultaneously. As the result of the key allocation process, Input Device 210 normally utilized for communication purposes, including keypad and buttons, is allocated as input means for performing the game function. In the example described in Fig. 287, Key #1 is assigned for instructing CPU 211 (Fig. 1) to move up User Controlled Car UCC (Fig. 284), Key #2 is assigned for instructing CPU 211 to move down User Controlled Car UCC, Key #3 is assigned for instructing CPU 211 to move forward User Controlled Car UCC, Key #4 is assigned for instructing CPU 211 to move backward User

Controlled Car UCC, Key #5 is assigned for instructing CPU 211 to increase the traveling speed of User Controlled Car UCC, and Key #6 is assigned for instructing CPU 211 to decrease the traveling speed of User Controlled Car UCC, and all the foregoing data are stored in Key Allocation Data Storage Area 2061h (Fig. 144).

[2322] Fig. 288 illustrates the overall process of the driving video game function of Communication Device 200. As described in Fig. 288, CPU 211 (Fig. 1) performs the user controlled car process (S1), the CPU controlled car process for all CPU Controlled Car CCCs (Fig. 284) displayed on LCD 201 (Fig. 1) (S2), the street image process (S3), and the background image process (S4). The details of each process are explained in Figs. 289 through 292 respectively.

[2323] Fig. 289 illustrates the details of the user controlled car process explained in S1 of Fig. 288. First of all, the user of Communication Device 200 manipulates the operation of User Controlled Car UCC (Fig. 284) displayed on LCD 201 (Fig. 1) by Input Device 210 (Fig. 1) or via voice recognition system, and the input control signal produced therefrom is transferred to CPU 211 (Fig. 1) (S1). Upon receiving the input control signal, CPU 211 refers to Key Alloca-

tion Data Storage Area 2061h (Fig. 287) and determines the speed and the direction of User Controlled Car UCC (S2), and displays the image of User Controlled Car UCC on LCD 201 perceived from a predetermined view point (S3).

[2324] Fig. 290 illustrates the details of the CPU controlled car process explained in S2 of Fig. 288. First of all, CPU 211 (Fig. 1) periodically refers to CPU Controlled Car Parameter Storage Area 2061g1 (Fig. 286) (S1), and determines the speed and the direction of CPU Controlled Car CCC (Fig. 284) (S2). CPU 211 then displays the image of CPU Controlled Car CCC on LCD 201 perceived from a predetermined view point (S3). The process from S1 through S3 explained in Fig. 290 is performed for each CPU Controlled Car CCC (Fig. 284).

[2325] Fig. 291 illustrates the details of the street image process explained in S3 of Fig. 288. First of all, CPU 211 (Fig. 1) periodically refers to Street Parameter Storage Area 2061g2 (Fig. 286) (S1), and determines the current road condition by the parameter stored therein (S2). CPU 211 then displays, in accordance with the parameter, Street Image STIm (Fig. 284) on LCD 201(Fig. 1) perceived from a predetermined view point (S3).

[2326] Fig. 292 illustrates the details of the background image process explained in S4 of Fig. 288. First of all, CPU 211 (Fig. 1) periodically refers to Background Parameter Storage Area 2061g3 (Fig. 286) (S1), and determines the current layout of Background Image BGIm (Fig. 284) by the parameter stored therein (S2). CPU 211 then displays, in accordance with the parameter, Background Image BGIm (Fig. 284) on LCD 201(Fig. 1) perceived from a predetermined view point (S3).

[2327] Fig. 293 illustrates another embodiment of the present function which enables to display on LCD 201 (Fig. 1) User Controlled Car UCC (Fig. 284) and CPU Controlled Car CCC (Fig. 284) from a different view point. In the example described in Fig. 293, User Controlled Car UCC and CPU Controlled Car CCC are viewed from the upper side whereas both objects are viewed from the rear side in the example described in Fig. 284. The view point is selected by Input Device 210 (Fig. 1) or via voice recognition system.

[2328] Fig. 294 illustrates the process to select the view point. As described in Fig. 294, an input view selection signal is input by Input Device 210 (Fig. 1) or via voice recognition system (S1), and CPU 211 (Fig. 1) changes the view point

in accordance with the input view selection signal (S2). As a result of such selection, the displaying process described in S3 of Fig. 289 (displaying User Controlled Car UCC (Fig. 284)), S3 of Fig. 290 (displaying CPU Controlled Car CCC (Fig. 284)), S3 of Fig. 291 (displaying Street Image STIm), and S4 of Fig. 292 (displaying Background Image BGIm) are performed respectively from the view point determined in S2.

[2329] *<<Address Book Updating Function>>*

[2330] Figs. 295 through 312 illustrate the address book updating function of Communication Device 200 which updates the address book stored in Communication Device 200 by a personal computer via network (e.g., the Internet).

[2331] Fig. 295 illustrates the basic elements necessary to implement the address book updating function which is explained in details hereinafter. As described in Fig. 295, Personal Computer PC, Host H, and Communication Device 200 are connected to Network NT in a wireless fashion. Here, Personal Computer PC is capable to access Host H via Network NT, and Host H is capable to access Communication Device 200 via Network NT.

[2332] Fig. 296 illustrates the software program installed in Communication Device 200 to initiate the present func-

tion. First of all, a list of modes is displayed on LCD 201 (Fig. 1) (S1). When an input signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system to select a specific mode (S2), the selected mode is activated. In the present example, the communication mode is activated (S3a) when the communication mode is selected in the previous step, the game download mode and the game play mode are activated (S3b) when the game download mode and the game play mode are selected in the previous step of which the details are described in Fig. 137, and the address book updating function is activated (S3c) when the address book updating function is selected in the previous step. The modes displayed on LCD 201 in S1 which are selectable in S2 and S3 may include all functions and modes explained in this specification. Once the selected mode is activated, another mode can be activated while the first activated mode is still implemented by going through the steps of S1 through S3 for another mode, thereby enabling a plurality of functions and modes being performed simultaneously (S4).

[2333] Fig. 297 illustrates the data stored in RAM 206 (Fig. 1). As described in Fig. 297, the data to activate (as described in S3a of the previous figure) and to perform the communi-

cation mode is stored in Communication Data Storage Area 2061a, the data to activate (as described in S3b of the previous figure) and to perform the game download mode and the game play mode are stored in Game DL/ Play Data Storage Area 2061b/2061c of which the details are described in Fig. 138, and the data to activate (as described in S3c of the previous figure) and to perform the address book updating function is stored in Address Book Information Storage Area 20612a.

[2334] Fig. 298 illustrates the method to input new address via Personal Computer PC (Fig. 295). Here, Personal Computer PC is an ordinary personal computer which includes a keyboard and a mouse as input devices. As described in Fig. 298, a web page is shown on a display of Personal Computer PC (S1). The user of Personal Computer PC inputs his/her user ID via keyboard to display his/her own user's page (S2). Once his/her user's page is opened (S3), the user of Personal Computer PC selects the address book displayed thereon (S4) to open and display his/her own address book (S5). The user of Personal Computer PC then inputs a new address into the address book via keyboard (S6), and registers it by clicking a confirmation button displayed therein with a mouse (S7). The registered

new address is transferred from Personal Computer PC to Host H via Network NT (Fig. 295) together with the user ID input in S2 (Fig. 295).

[2335] Fig. 299 illustrates the information stored in the address book explained in Fig. 298. Address book is composed of a plurality of Address Data AD. As described in Fig. 299, Address Data AD is composed of Name, Home Address, Tel, and Email. Here, Name represents the first and last name of a person, Home Address represents the home address where such person resides, Tel represents the telephone number utilized by such person, and Email represents the email address utilized by such person.

[2336] Fig. 300 illustrates the data stored in Host H (Fig. 295). As described in Fig. 300, Host H includes Users' Address Book Data Storage Area H12a which is explained in details in Fig. 301 hereinafter.

[2337] Fig. 301 illustrates the information stored in Users' Address Book Data Storage Area H12a. Users' Address Book Data Storage Area H12a stores address book data of each user. In the example described in Fig. 301, Users' Address Book Data Storage Area H12a stores address book data ABDa of user A, address book data ABDb of user B, address book data ABDc of user C, address book data ABDd

of user D, and address book data ABDe of user E. Each of address book data ABDa, address book data ABDb, address book data ABDc, address book data ABDd, and address book data ABDe stores a plurality of Address Data AD explained in Fig. 299.

[2338] Fig. 302 illustrates one example of the address book data stored in Users' Address Book Data Storage Area H12a (Fig. 301). In the example described in Fig. 302, address book data ABDa of user A (Fig. 301) stores a plurality of address data, i.e., Address Data ADf of user F, Address Data ADg of user G, Address Data ADh of user H, Address Data ADi of user I, and Address Data ADj of user J. Each of Address Data ADf, Address Data ADg, Address Data ADh, Address Data ADi, and Address Data ADj is composed of data explained in Fig. 299.

[2339] Fig. 303 illustrates the sequence of updating the address book data stored in Users' Address Book Data Storage Area H12a (Fig. 301). As described in Fig. 303, Host H (Fig. 295) retrieves the user ID from the transferred data described in S8 of Fig. 298, and identifies address book data which is updated thereafter(S2).

[2340] Fig. 304 illustrates one example of the updated address book data stored in Users' Address Book Data Storage

Area H12a (Fig. 301). In the example described in Fig. 304, address book data ABDa of user A stored in Users' Address Book Data Storage Area H12a (Fig. 301), which originally stored Address Data ADf of user F, Address Data ADg of user G, address data ADh of user H, Address Data ADi of user I, and Address Data ADj of user J, as described in Fig. 302, is updated by adding new Address Data ADk of user K as shown in the present drawing figure.

[2341] Fig. 305 illustrates the next process after updating the address book data as described in Figs. 303 and 304. As described in Fig. 305, Host H (Fig. 295) selects the user ID of address book data ABD which has been just updated (S1). In the example described in Fig. 304, user A of address book data ABDa is selected. Next, Host H is connected to Communication Device 200 of user A via Network NT (Fig. 295) (S2), and transfers the new address data which is Address Data ADk of user K in the example described in Fig. 304 (S3).

[2342] Fig. 306 illustrates the data stored in Address Book Information Storage Area 20612a (Fig. 297). As described in Fig. 306, Address Book Information Storage Area 20612a includes Address Book Software Storage Area 20612b and Address Book Data Storage Area 20612c. Here, Address

Book Software Storage Area 20612b stores a software program which is explained in details in Fig. 308, and Address Book Data Storage Area 20612c stores the data which is explained in details in Fig. 307 hereinafter.

[2343] Fig. 307 illustrates one example of the address book data stored in Address Book Data Storage Area 20612c (Fig. 306) before being updated. In the example described in Fig. 307, Address Book Data Storage Area 20612c of Communication Device 200 owned by user A stores a plurality of address data, i.e., Address Data ADf of user F, Address Data ADg of user G, Address Data ADh of user H, Address Data ADi of user I, and Address Data ADj of user J. Each of address data ADf, Address Data ADg, Address Data ADh, Address Data ADi, and Address Data ADj is composed of data explained in Fig. 299. Address Book Data Storage Area 20612c of Communication Device 200 is periodically synchronized with address book data ABD (Fig. 302) of Host H, thereby both data are identical.

[2344] Fig. 308 illustrates the sequence of updating data stored in Address Book Data Storage Area 20612c (Fig. 306). As described in Fig. 308, Communication Device 200 is connected to Host H (Fig. 295) by the control of CPU 211 (Fig. 1) (S1) and receives new address data transferred by Host

H as described in S3 of Fig. 305 (S2). CPU 211 retrieves new address data therefrom and updates Address Book Data Storage Area 20612c accordingly (S3).

[2345] Fig. 309 illustrates one example of the updated address book data stored in Address Book Data Storage Area 20612c (Fig. 306). In the example described in Fig. 309, address book data ABDa of user A stored in Address Book Data Storage Area 20612c (Fig. 307) which originally stored Address Data ADf of user F, Address Data ADg of user G, Address Data ADh of user H, Address Data ADi of user I, and Address Data ADj of user J, as described in Fig. 307, is updated by adding new Address Data ADk of user K as shown in the present drawing figure.

[2346] The method to modify one portion of Address Data AD described in Fig. 299 (for example, Home Address and Email) is illustrated in Figs. 310 through 312. The explanations of Figs. 299 through 303 and Figs. 305 through 308 also apply to this embodiment.

[2347] Fig. 310 illustrates the method to modify Address Data AD (Fig. 299) via Personal Computer PC (Fig. 295). Here, Personal Computer PC is an ordinary personal computer which includes a keyboard and a mouse as input device. As described in Fig. 310, a web page is shown on a dis-

play of Personal Computer PC (S1). The user of Personal Computer PC inputs his/her user ID via keyboard to display his/her own user's page (S2). Once his/her user's page is opened (S3), the user of Personal Computer PC selects the address book displayed thereon (S4) to open and display his/her own address book (S5). The user of Personal Computer PC then modifies one or more of addresses in the address book via keyboard (S6), and registers it by clicking a confirmation button displayed therein with a mouse (S7). The modified address is transferred from Personal Computer PC to Host H via Network NT (Fig. 295) together with the user ID input in S2 (Fig. 295).

[2348] Fig. 311 illustrates one example of the updated address book data stored in Users' Address Book Data Storage Area H12a (Fig. 301). In the example described in Fig. 311, address book data ABDa of user A stored in Users' Address Book Data Storage Area H12a (Fig. 301) originally stored Address Data ADf of user F, Address Data ADg of user G, Address Data ADh of user H, Address Data ADi of user I, and Address Data ADj of user J, as described in Fig. 302, and is updated by modifying Address Data ADj of user J as shown in the present drawing figure.

[2349] Fig. 312 illustrates one example of the updated address

book data stored in Address Book Data Storage Area 20612c (Fig. 306). In the example described in Fig. 312, address book data ABDa of user A stored in Address Book Data Storage Area 20612c (Fig. 307) originally stored Address Data ADf of user F, Address Data ADg of user G, Address Data ADh of user H, Address Data ADi of user I, and Address Data ADj of user J, as described in Fig. 307, and is updated by modifying Address Data ADj of user J as shown in the present drawing figure.

[2350] *<<Batch Address Book Updating Function -- With Host>>*

[2351] Figs. 313 through 329 illustrate the batch address book updating function which updates all address books of a plurality of Communication Devices 200 in one action.

[2352] Fig. 313 illustrates the basic elements necessary to implement the batch address book updating function which is explained in details hereinafter. As described in Fig. 313, Host H and a plurality of Communication Devices 200 (two devices in the example described in Fig. 313) are connected to Network NT in a wireless fashion. Here, a plurality of Communication Devices 200 are capable to access Host H via Network NT, and Host H is capable to access the plurality of Communication Devices 200 via Network NT.

[2353] Fig. 314 illustrates the software program installed in Communication Device 200 to initiate the present function. First of all, a list of modes is displayed on LCD 201 (Fig. 1) (S1). When an input signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system to select a specific mode (S2), the selected mode is activated. In the present example, the communication mode is activated (S3a) when the communication mode is selected in the previous step, the game download mode and the game play mode are activated (S3b) when the game download mode and the game play mode are selected in the previous step of which the details are described in Fig. 137, and the batch address book updating function is activated (S3c) when the batch address book updating function is selected in the previous step. The modes displayed on LCD 201 in S1 which are selectable in S2 and S3 may include all functions and modes explained in this specification. Once the selected mode is activated, another mode can be activated while the first activated mode is still implemented by going through the steps of S1 through S3 for another mode, thereby enabling a plurality of functions and modes being performed simultaneously (S4).

[2354] Fig. 315 illustrates the data stored in RAM 206 (Fig. 1). As

described in Fig. 315, the data to activate (as described in S3a of the previous figure) and to perform the communication mode is stored in Communication Data Storage Area 2061a, the data to activate (as described in S3b of the previous figure) and to perform the game download mode and the game play mode are stored in Game DL/Play Data Storage Area 2061b/2061c of which the details are described in Fig. 138, and the data to activate (as described in S3c of the previous figure) and to perform the batch address book updating function is stored in Address Book Information Storage Area 20613a.

[2355] Fig. 316 illustrates the data stored in Host H (Fig. 313). As described in Fig. 316, Host H includes Users' Address Book Data Storage Area H13a which is explained in details in Fig. 317 hereinafter.

[2356] Fig. 317 illustrates the information stored in Users' Address Book Data Storage Area H13a. Users' Address Book Data Storage Area H13a stores address data of each user. In the example described in Fig. 317, Users' Address Book Data Storage Area H13a stores Address Data ADa of user A, Address Data ADb of user B, Address Data ADc of user C, Address Data ADd of user D, and Address Data ADe of user E. Each of Address Data ADa, Address Data ADb, Ad-

dress Data ADc, Address Data ADd, and Address Data ADe stores a plurality of Address Data AD explained in Fig. 318 hereinafter.

[2357] Fig. 318 illustrates the information stored in each of Address Data ADa through ADe explained in Fig. 317. As described in Fig. 318, Address Data AD is composed of Name, Home Address, Tel, and Email. Here, Name represents the first and last name of a person, Home Address represents the home address where such person resides, Tel represents the telephone number utilized by such person, and Email represents the email address utilized by such person.

[2358] Fig. 319 illustrates one example of the updated address data stored in Users' Address Book Data Storage Area H13a (Fig. 317). In the example described in Fig. 319, Users' Address Book Data Storage Area H13a which originally stored Address Data ADa of user A, Address Data ADb of user B, Address Data ADc of user C, Address Data ADd of user D, and Address Data ADe of user E, as described in Fig. 317, is updated by adding new Address Data ADf of user F as shown in the present drawing figure.

[2359] Fig. 320 illustrates the next process after updating the address data as described in Fig. 319. As described in Fig.

320, Host H (Fig. 313) is connected to all Communication Devices 200 (two Communication Devices 200 in the example described in Fig. 313) via Network NT (Fig. 313) (S1), and transfers the new address data which is Address Data ADf of user F in the example described in Fig. 319 (S2).

[2360] Fig. 321 illustrates the data stored in Address Book Information Storage Area 20613a (Fig. 315) of Communication Device 200. As described in Fig. 321, Address Book Information Storage Area 20613a includes Address Book Software Storage Area 20613b and Address Book Data Storage Area 20613c. Here, Address Book Software Storage Area 20613b stores a software program which is explained in details in Fig. 324 hereinafter, and Address Book Data Storage Area 20613c stores the data which is explained in details in Fig. 322 hereinafter.

[2361] Fig. 322 illustrates one example of the address book data stored in Address Book Data Storage Area 20613c (Fig. 321) of all Communication Devices 200 before being updated. In the example described in Fig. 322, Address Book Data Storage Area 20613c of Communication Device 200 stores a plurality of address data, i.e., Address Data ADa of user A, Address Data ADb of user B, Address Data ADc

of user C, Address Data ADd of user D, and Address Data ADe of user E. Each of Address Data ADa, Address Data ADb, Address Data ADc, Address Data ADd, and Address Data ADe is composed of data explained in Fig. 323 hereinafter. Address Book Data Storage Area 20613c of all Communication Devices 200 are periodically synchronized with users' address book data storage are H13a (Fig. 317) of Host H (Fig. 313), thereby both data are identical.

[2362] Fig. 323 illustrates the information stored in each address data explained in Fig. 322. As described in Fig. 323, Address Data AD is composed of Name, Home Address, Tel, and Email. Here, Name represents the first and last name of a person, Home Address represents the home address where such person resides, Tel represents the telephone number utilized by such person, and Email represents the email address utilized by such person.

[2363] Fig. 324 illustrates the sequence of updating data stored in Address Book Data Storage Area 20613c (Fig. 321). As described in Fig. 324, all Communication Devices 200 are connected to Host H (Fig. 313) by the control of CPU 211 (Fig. 1) (S1), and each Communication Device 200 receives new address data transferred from Host H as described in S3 of Fig. 320 (S2). CPU 211 retrieves new address data

therefrom and updates Address Book Data Storage Area 20613c accordingly (S3).

[2364] Fig. 325 illustrates one example of the updated address book data stored in Address Book Data Storage Area 20613c (Fig. 321). In the example described in Fig. 325, Address Book Data Storage Area 20613c which originally stored Address Data ADa of user A, Address Data ADb of user B, Address Data ADc of user C, Address Data ADd of user D, and Address Data ADe of user E, as described in Fig. 322, is updated by adding new Address Data ADf of user F as shown in the present drawing figure.

[2365] As another embodiment, the entire data stored in Users' Address Book Data Storage Area H13a (Fig. 319), including the new address data (Address Data ADf of user F in the example described in Fig. 319), can be sent to each Communication Device 200 and rewrite the entire data stored in Address Book Data Storage Area 20613c (Fig. 321) of Communication Device 200 instead of sending only the new address data (Address Data ADf of user F in the example described in Fig. 319).

[2366] The method to modify one portion of Address Data AD described in Fig. 323 (for example, Home Address and Email) is illustrated in Figs. 326 through 329. The expla-

nations of Figs. 313 through 318 and Figs. 321 through 323 also apply to this embodiment.

[2367] Fig. 326 illustrates one example of the updated address data stored in Users' Address Book Data Storage Area H13a (Fig. 317). In the example described in Fig. 326, Users' Address Book Data Storage Area H13a which originally stored Address Data ADa of user A, Address Data ADb of user B, Address Data ADc of user C, Address Data ADd of user D, and Address Data ADe of user E, as described in Fig. 317, is updated by modifying Address Data ADe of user E as shown in the present drawing figure.

[2368] Fig. 327 illustrates the next process after modifying the address data as described in Fig. 326. As described in Fig. 327, Host H (Fig. 313) is connected to all Communication Device 200 (two Communication Devices 200 in the example described in Fig. 313) via Network NT (Fig. 313) (S1), and transfers the modified address data which is Address Data ADe of user E in the example described in Fig. 326 (S2).

[2369] Fig. 328 illustrates the sequence of modifying data stored in Address Book Data Storage Area 20613c (Fig. 321) of Communication Device 200. As described in Fig. 328, all Communication Devices 200 are connected to Host H (Fig.

313) by the control of CPU 211 (Fig. 1) (S1), and each Communication Device 200 receives modified address data transferred by Host H (Fig. 313) as described in S2 of Fig. 327 (S2). CPU 211 retrieves modified address data therefrom and updates Address Book Data Storage Area 20613c accordingly (S3).

[2370] Fig. 329 illustrates one example of the modified address book data stored in Address Book Data Storage Area 20613c (Fig. 321). In the example described in Fig. 329, Address Book Data Storage Area 20613c which originally stored Address Data ADa of user A, Address Data ADb of user B, Address Data ADc of user C, Address Data ADd of user D, and Address Data ADe of user E, as described in Fig. 322, is updated by modifying Address Data ADe of user E as shown in the present drawing figure.

[2371] As another embodiment, the entire data stored in Users' Address Book Data Storage Area H13a (Fig. 326), including the modified address data (Address Data ADe of user E in the example described in Fig. 326), can be sent to each Communication Device 200 and rewrite the entire data stored in Address Book Data Storage Area 20613c instead of sending only the modified address data (Address Data ADe of user E in the example described in

Fig. 326).

[2372] *<<Batch Address Book Updating Function -- Peer-To-Peer Connection>>*

[2373] The present invention can also be implemented without utilizing Users' Address Book Data Storage Area H13a (Fig. 326) of Host H (Fig. 313). The details of this embodiment is explained in details hereinafter. The descriptions of Figs. 314, 315, 318, 321 through 323, and 325 also apply to this embodiment.

[2374] Fig. 329a illustrates the basic elements necessary to implement the batch address book updating function without utilizing Host H (Fig. 313). As described in Fig. 329a, a plurality of Communication Devices 200 (two devices in the example described in Fig. 329a) are connected to Network NT in a wireless fashion. Here, a plurality of Communication Devices 200 are capable to access each other via Network NT.

[2375] Fig. 329b illustrates the sequence of Communication Device 200 to update Address Data AD (Fig. 323) which is to be reflected and displayed on the rest of Communication Devices 200. First, CPU 211 (Fig. 1) of Communication Device 200 (e.g., owned by user A in Fig. 329a) updates Address Book Data Storage Area 20613c by including new

address data as described in Figs. 325 or by including modified address data as described in Fig. 329 (S1). CPU 211 of Communication Device 200 then connects to the rest of Communication Device 200 (i.e., the device of user B in Fig. 329a) via Network NT (Fig. 329a) in a wireless fashion (S2), and sends the updated Address Data AD (S3). Address Book Data Storage Area 20613c of Communication Device 200 owned by user B is thereby identical to Address Book Data Storage Area 20613c of Communication Device 200 owned by user A.

[2376] Fig. 329c illustrates the sequence of all Communication Device 200 (i.e., the devices of users A and B in the example described in Fig. 329a) to confirm any new address data to be updated. As described in Fig. 329c, each Communication Device 200 is periodically connected to the rest of Communication Devices 200 (S1) in order to check whether there are any updated address data (S2). If there are address data to be updated in any of the rest of Communication Devices 200 (S3), each Communication Device 200 retrieves the updated address data from Communication Device 200 which contains thereof (S4). For the avoidance of doubt, 'updated address data' means new address data as described in Fig. 325 and/or modified ad-

dress data as described in Fig. 329.

[2377] *<<Batch Scheduler Updating Function -- With Host>>*

[2378] Figs. 330 through 350 illustrate the batch scheduler updating function which updates all schedulers of a plurality of Communication Devices 200 in one action by utilizing a host.

[2379] Fig. 330 illustrates scheduler Sch which is displayed on LCD 201 (Fig. 1) of all Communication Devices 200 implementing the batch scheduler updating function. Referring to Fig. 330, the schedules of Users A, B, and C are displayed on each Communication Device 200 of these users. More precisely, Scheduling Data SchDa1 and SchDa2 of user A, Scheduling Data SchDb1 of user B, and Scheduling Data SchDc1 of user C are displayed on single scheduler Sch.

[2380] Fig. 331 illustrates the basic elements necessary to implement the batch scheduler updating function which is explained in details hereinafter. As described in Fig. 331, Host H and a plurality of Communication Devices 200 (three devices for user A, B, and C in the example described in Fig. 331) are connected to Network NT in a wireless fashion. Here, the plurality of Communication Devices 200 are capable to access Host H via Network NT,

and Host H is capable to access the plurality of Communication Devices 200 via Network NT.

[2381] Fig. 332 illustrates the software program installed in each Communication Device 200 to initiate the present function. First of all, a list of modes is displayed on LCD 201 (Fig. 1) (S1). When an input signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system to select a specific mode (S2), the selected mode is activated. In the present example, the communication mode is activated (S3a) when the communication mode is selected in the previous step, the game download mode and the game play mode are activated (S3b) when the game download mode and the game play mode are selected in the previous step of which the details are described in Fig. 137, and the batch scheduler updating function is activated (S3c) when the batch scheduler updating function is selected in the previous step. The modes displayed on LCD 201 in S1 which are selectable in S2 and S3 may include all functions and modes explained in this specification. Once the selected mode is activated, another mode can be activated while the first activated mode is still implemented by going through the steps of S1 through S3 for another mode, thereby enabling a plurality of func-

tions and modes being performed simultaneously (S4).

[2382] Fig. 333 illustrates the data stored in RAM 206 (Fig. 1). As described in Fig. 333, the data to activate (as described in S3a of the previous figure) and to perform the communication mode is stored in Communication Data Storage Area 2061a, the data to activate (as described in S3b of the previous figure) and to perform the game download mode and the game play mode are stored in Game DL/Play Data Storage Area 2061b/2061c of which the details are described in Fig. 137, and the data to activate (as described in S3c of the previous figure) and to perform the batch scheduler updating function is stored in Scheduling Information Storage Area 20614a.

[2383] Fig. 334 illustrates the data stored in Scheduling Information Storage Area 20614a (Fig. 333). As described in Fig. 334, Scheduling Information Storage Area 20614a includes Scheduling Software Storage Area 20614b and Scheduling Data Storage Area 20614c. Here, Scheduling Software Storage Area 20614b stores the software programs which are necessary to implement the present function, such as the ones explained in Figs. 343, 349, and 351 hereinafter, and Scheduling Data Storage Area 20614c stores the data which is explained in details in

Figs. 335 through 340 hereinafter.

[2384] Fig. 335 illustrates one example of the scheduling data stored in Scheduling Data Storage Area 20614c (Fig. 334) of all Communication Devices 200 before being updated. In the example described in Fig. 335, Scheduling Data Storage Area 20614c of Communication Device 200 stores a plurality of scheduling data, i.e., Scheduling Data SchDa of user A, Scheduling Data SchDb of user B, and Address Data ADc of user C in the example. Each of Scheduling Data SchDa, Scheduling Data SchDb, and Scheduling Data SchDc is composed of data explained in Figs. 336 through 340 hereinafter. Scheduling Data Storage Area 20614c of each Communication Device 200 is periodically synchronized with other Communication Devices 200 by the method explained hereinafter.

[2385] Fig. 336 illustrates the Scheduling Data SchD stored in Scheduling Data Storage Area 20614c (Fig. 335). As described in Fig. 336, Scheduling Data SchD includes 'Subject', 'Importance', 'Date', 'Day', 'Starting Time', 'Ending Time', 'Place' and 'Memo'. Here, 'Subject' represents the subject of a specific schedule, 'Importance' represents the importance of the specific schedule, 'Date' represents the date of the specific schedule, 'Day' represents the day of

the specific schedule, 'Starting Time' represents the starting time of the specific schedule, 'Ending Time' represents the ending time of the specific schedule, 'Place' represents the place where the specific schedule is performed, and 'Memo' represents a memo, i.e., a series of alphanumeric data input by the user of Communication Device 200.

[2386] Figs. 337 through 340 illustrate the example of the data described in Fig. 336 by referring to Fig. 330.

[2387] Fig. 337 illustrates the Scheduling Data SchD (Fig. 336) of user A described in Fig. 330. Referring to Figs. 337 and 330, the subject of the present schedule is 'Meeting', the importance of the present schedule is 'B Rank', the date which the present schedule takes place is '5/1', the day which the present schedule takes place is 'Mon', the starting time of the present schedule is '8:30AM', the ending time of the present schedule is '11:30AM', the place where the present schedule is performed is 'Room B', and the memo which is input by user A is 'Don't forget to bring the project paper.'

[2388] Fig. 338 illustrates the Scheduling Data SchD (Fig. 336) of user A described in Fig. 330. Referring to Figs. 338 and 330, the subject of the present schedule is 'Dinner With Mr. Green', the importance of the present schedule is 'A

Rank', the date which the present schedule takes place is '5/4', the day which the present schedule takes place is 'Thur', the starting time of the present schedule is '7:00PM', the ending time of the present schedule is '8:00PM', the place where the present schedule is performed is 'Chinese Restaurant Chou', and the memo which is input by user A is 'Don't forget to bring the credit card.'

[2389] Fig. 339 illustrates the Scheduling Data SchD (Fig. 336) of user B described in Fig. 330. Referring to Figs. 339 and 330, the subject of the present schedule is 'Meeting', the importance of the present schedule is 'A Rank', the date which the present schedule takes place is '5/2', the day which the present schedule takes place is 'Tue', the starting time of the present schedule is '2:00PM', the ending time of the present schedule is '7:00PM', the place where the present schedule is performed is 'Room B', and the memo which is input by user A is 'Re: cancellation of project B.'

[2390] Fig. 340 illustrates the Scheduling Data SchD (Fig. 336) of user C described in Fig. 330. Referring to Figs. 340 and 330, the subject of the present schedule is 'Meeting', the importance of the present schedule is 'B Rank', the date which the present schedule takes place is '5/1', the day

which the present schedule takes place is 'Mon', the starting time of the present schedule is '2:00PM', the ending time of the present schedule is '7:00PM', the place where the present schedule is performed is 'Room C', and the memo which is input by user A is 'Consult CPA.'

[2391] Fig. 341 illustrates a new schedule, Scheduling Data SchDc2, which is newly input by user C by utilizing Input Device 210 (Fig. 1) or via voice recognition system. The new schedule input by user C is reflected and displayed on the rest of Communication Devices 200 (i.e., the devices of users A and B in the example described in Fig. 331) by the method explained hereinafter.

[2392] Fig. 342 illustrates Scheduling Data SchD (Fig. 336) of user C described in Fig. 341. Referring to Figs. 341 and 342, the subject of the present schedule is 'Lunch With Tom', the importance of the present schedule is 'C Rank', the date which the present schedule takes place is '5/2', the day which the present schedule takes place is 'Tue', the starting time of the present schedule is '12:00PM', the ending time of the present schedule is '1:00PM', the place where the present schedule is performed is 'KFC', and the memo which is input by user C is 'Meet in front of KFC.'

[2393] Fig. 343 illustrates the sequence of Communication De-

vice 200 to update Scheduling Data SchD (Fig. 336) described in Figs 341 and 342 which is to be reflected and displayed on the rest of Communication Devices 200 (i.e., the devices of users A and B in the example described in Fig. 331). First, CPU 211 (Fig. 1) of Communication Device 200 owned by user C updates Scheduling Data Storage Area 20614c by including new scheduling data described in Figs. 341 and 342 (S1). CPU 211 then connects to Host H (Fig. 331) via Network NT (Fig. 331) in a wireless fashion (S2), and sends Scheduling Data SchDc2 (Fig. 341) which represents the data explained in Fig. 342 (S3).

[2394] Fig. 344 illustrates the data stored in Host H (Fig. 331). As described in Fig. 344, Host H includes Users' Scheduling Data Storage Area H14a which is explained in details in Fig. 345 hereinafter.

[2395] Fig. 345 illustrates the information stored in Users' Scheduling Data Storage Area H14a (Fig. 344). Users' Scheduling Data Storage Area H14a stores Scheduling Data SchD (Fig. 336) of each user. In the example described in Fig. 345, Users' Scheduling Data Storage Area H14a stores Scheduling Data SchDa of user A, Scheduling Data SchDb of user B, and Scheduling Data SchDc of user C. Referring to Figs. 337 through 340, Scheduling Data

SchDa stores the data explained in Figs. 337 and 338, Scheduling Data SchDb stores the data explained in Fig. 339, and Scheduling Data SchDc stores the data explained in Fig. 340.

[2396] Fig. 346 illustrates the process to update the data stored in Users' Scheduling Data Storage Area H14a (Fig. 345) of Host H (Fig. 331). As described in Fig. 346, Host H is connected to Communication Device 200 owned by user C via Network NT (Fig. 331) in a wireless fashion (S1). Next, Host H receives the updated scheduling data (Scheduling Data SchDc2 described in Fig. 342 in the present example), and updates Users' Scheduling Data Storage Area H14a accordingly (S3). After S3 is completed, the data stored in Users' Scheduling Data Storage Area H14a is identical to the one described in Fig. 341 which includes Scheduling Data SchDc2 of user C.

[2397] Fig. 347 illustrates the process of Host H (Fig. 331) to send the updated scheduling data to the other Communication Devices 200. First, Host H is connected in a wireless fashion via Network NT (Fig. 331) to Communication Devices 200 other than the one owned by user C (i.e., the devices owned by users A and B in the example described in Fig. 331) (S1). Host H then sends the updated schedul-

ing data which was received in S2 of Fig. 346 (Scheduling Data SchDc2 described in Fig. 342 in the present example) (S2).

[2398] Fig. 348 illustrates the process of the rest of Communication Devices 200 (i.e., the devices owned by users A and B in the example described in Fig. 331) to update the scheduling data they store. First, Communication Devices 200 (i.e., the devices owned by users A and B in the present example) are connected in a wireless fashion via Network NT (Fig. 331) to Host H (Fig. 331) (S1). Communication devices 200 then receives the updated scheduling data which was sent in S2 of Fig. 347 (Scheduling Data SchDc2 described in Fig. 342 in the present example) (S2). CPU 211 (Fig. 1) of each Communication Device 200 updates its Scheduling Data Storage Area 20614c (Fig. 335) by utilizing the data received in S2 (S3).

[2399] Fig. 349 illustrates the sequence of Host H (Fig. 331) to confirm any new scheduling data to be updated. As described in Fig. 349, Host H is periodically connected to all Communication Devices 200 (the devices owned by user A, B, and C in the example described in Fig. 331) (S1) in order to check whether there are any updated scheduling data (S2). If scheduling data to be updated is found in one

of Communication Devices 200 (e.g., the device owned by user C) (S3), Host H sends to the particular Communication Device 200 (e.g., the device owned by user C) an instruction indicating to send the new scheduling data to Host H (S4).

[2400] Fig. 350 illustrates the sequence of the particular Communication Device 200 (e.g., the device owned by user C) which received the instruction explained in S4 of Fig. 349. As described in Fig. 350, the particular Communication Device 200 which received the instruction from Host H (Fig. 331) as explained in S4 of Fig. 349 is connected to Host H (S1). CPU 211 (Fig. 1) of the particular Communication Device 200 then sends the updated scheduling data to Host H in a wireless fashion (S2). The explanations of Figs. 344 through 348 apply hereinafter.

[2401] *<<Batch Scheduler Updating Function -- Peer-To-Peer Connection>>*

[2402] The present invention can also be implemented without Users' Scheduling Data Storage Area H14a (Fig. 344) of Host H (Fig. 331). The details of this embodiment is explained in details hereinafter. The descriptions of Figs. 330 through 350 apply unless stated otherwise.

[2403] Instead of Communication Device 200 accessing Host H

(Fig. 331) as described in Fig. 343, each Communication Device 200 directly contacts the other Communication Devices 200 (without accessing Host H) in this embodiment as described in Fig. 351. Fig. 351 illustrates the sequence of each Communication Device 200 to update Scheduling Data SchD (Fig. 336) described in Figs 341 and 342 which is to be reflected and displayed on the rest of Communication Devices 200 (i.e., the devices of users A and B in the example described in Fig. 330). First, CPU 211 (Fig. 1) of Communication Device 200 owned by user C updates Scheduling Data Storage Area 20614c (Fig. 335) by including new scheduling data described in Figs. 341 and 342 (S1). CPU 211 of Communication Device 200 owned by user C then connects to the rest of Communication Devices 200 (i.e., the devices of users A and B) via Network NT (Fig. 331) in a wireless fashion (S2), and sends Scheduling Data SchDc2 (Fig. 341) which represents the data explained in Fig. 342 (S3).

[2404] Instead of Host H (Fig. 331) accessing Communication Devices 200 as described in Fig. 349, each Communication Device 200 directly contacts the other Communication Devices 200 (without accessing Host H) in this embodiment as described in Fig. 352. Fig. 352 illustrates the

sequence of all Communication Devices 200 (i.e., the devices of users A, B, and C in the example described in Fig. 331) to confirm any new scheduling data to be updated. As described in Fig. 352, each Communication Device 200 is periodically connected to the rest of Communication Devices 200 (S1) in order to check whether there are any updated scheduling data (S2). If there are scheduling data to be updated in any of the rest of Communication Devices 200 (S3), each Communication Device 200 retrieves the updated scheduling data therefrom.

[2405] The descriptions of Figs. 330 through 350 are primarily emphasized on adding new scheduling data, however, the present invention is not limited thereto. Namely, the present invention is also applicable to modified scheduling data. For example, user A of Communication Device 200 modifies Scheduling Data SchDa1 described in Fig. 337 (e.g., change the 'Starting Time' from '8:30AM' to '9:30AM'). The description of 343 through 350 also apply herein.

[2406] *<<Calculator Function>>*

[2407] Figs. 353 through 356 illustrate the calculator function of Communication Device 200. Communication Device 200 can be utilized as a calculator to perform mathematical

calculation by implementing the present function.

[2408] Fig. 353 illustrates the software program installed in each Communication Device 200 to initiate the present function. First of all, a list of modes is displayed on LCD 201 (Fig. 1) (S1). When an input signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system to select a specific mode (S2), the selected mode is activated. In the present example, the communication mode is activated (S3a) when the communication mode is selected in the previous step, the game download mode and the game play mode are activated (S3b) when the game download mode and the game play mode are selected in the previous step of which the details are described in Fig. 137, and the calculator function is activated (S3c) when the calculator function is selected in the previous step. The modes displayed on LCD 201 in S1 which are selectable in S2 and S3 may include all functions and modes explained in this specification. Once the selected mode is activated, another mode can be activated while the first activated mode is still implemented by going through the steps of S1 through S3 for another mode, thereby enabling a plurality of functions and modes being performed simultaneously (S4).

[2409] Fig. 354 illustrates the data stored in RAM 206 (Fig. 1). As described in Fig. 354, the data to activate (as described in S3a of the previous figure) and to perform the communication mode is stored in Communication Data Storage Area 2061a, the data to activate (as described in S3b of the previous figure) and to perform the game download mode and the game play mode are stored in Game DL/Play Data Storage Area 2061b/2061c of which the details are described in Fig. 138, and the data to activate (as described in S3c of the previous figure) and to perform the calculator function is stored in Calculator Information Storage Area 20615a.

[2410] Fig. 355 illustrates the data stored in Calculator Information Storage Area 20615a (Fig. 354). As described in Fig. 355, Calculator Information Storage Area 20615a includes Calculator Software Storage Area 20615b and Calculator Data Storages Area 20615c. Calculator Software Storage Area 20615b stores the software programs to implement the present function, such as the one explained in Fig. 356, and Calculator Data Storage Area 20615c stores a plurality of data necessary to execute the software programs stored in Calculator Software Storage Area 20615b and to implement the present function.

[2411] Fig. 356 illustrates the software program stored in calculator storage Area 20615b (Fig. 355). Referring to Fig. 356, one or more of numeric data are input by utilizing Input Device 210 (Fig. 1) or via voice recognition system as well as the arithmetic operators (e.g., '+', '-', and 'x'), which are temporarily stored in Calculator Data Storage Area 20615c (S1). By utilizing the data stored in Calculator Data Storage Area 20615c, CPU 211 (Fig. 1) performs the calculation by executing the software program stored in Calculator Software Storage Area 20615b (Fig. 355) (S2). The result of the calculation is displayed on LCD 201 (Fig. 1) thereafter (S3).

[2412] *<<Spreadsheet Function>>*

[2413] Figs. 357 through 360 illustrate the spreadsheet function of Communication Device 200. Here, the spreadsheet is composed of a plurality of cells which are aligned in matrix. In other words, the spreadsheet is divided into a plurality of rows and columns in which alphanumeric data is capable to be input. Microsoft Excel is the typical example of the spreadsheet.

[2414] Fig. 357 illustrates the software program installed in each Communication Device 200 to initiate the present function. First of all, a list of modes is displayed on LCD 201

(Fig. 1) (S1). When an input signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system to select a specific mode (S2), the selected mode is activated. In the present example, the communication mode is activated (S3a) when the communication mode is selected in the previous step, the game download mode and the game play mode are activated (S3b) when the game download mode and the game play mode are selected in the previous step of which the details are described in Fig. 137, and the spreadsheet function is activated (S3c) when the spreadsheet function is selected in the previous step. The modes displayed on LCD 201 in S1 which are selectable in S2 and S3 may include all functions and modes explained in this specification. Once the selected mode is activated, another mode can be activated while the first activated mode is still implemented by going through the steps of S1 through S3 for another mode, thereby enabling a plurality of functions and modes being performed simultaneously (S4).

[2415] Fig. 358 illustrates the data stored in RAM 206 (Fig. 1). As described in Fig. 358, the data to activate (as described in S3a of the previous figure) and to perform the communication mode is stored in Communication Data Storage

Area 2061a, the data to activate (as described in S3b of the previous figure) and to perform the game download mode and the game play mode are stored in Game DL/ Play Data Storage Area 2061b/2061c of which the details are described in Fig. 138, and the data to activate (as described in S3c of the previous figure) and to perform the spreadsheet function is stored in Spreadsheet Information Storage Area 20616a.

[2416] Fig. 359 illustrates the data stored in Spreadsheet Information Storage Area 20616a (Fig. 358). As described in Fig. 359, Spreadsheet Information Storage Area 20616a includes Spreadsheet Software Storage Area 20616b and Spreadsheet Data Storage Area 20616c. Spreadsheet Software Storage Area 20616b stores the software programs to implement the present function, such as the one explained in Fig. 360, and Spreadsheet Data Storage Area 20616c stores a plurality of data necessary to execute the software programs stored in Spreadsheet Software Storage Area 20616b and to implement the present function.

[2417] Fig. 360 illustrates the software program stored in Spreadsheet Software Storage Area 20616b (Fig. 359). Referring to Fig. 360, a certain cell of a plurality of cells displayed on LCD 201 (Fig. 1) is selected by utilizing Input

Device 210 (Fig. 1) or via voice recognition system. The selected cell is highlighted by a certain manner, and CPU 211 (Fig. 1) stores the location of the selected cell in Spreadsheet Data Storage Area 20616c (Fig. 359) (S1). One or more of alphanumeric data are input by utilizing Input Device 210 or via voice recognition system into the cell selected in S1, and CPU 211 stores the alphanumeric data in Spreadsheet Data Storage Area 20616c (S2). CPU 211displays the alphanumeric data on LCD 201 thereafter (S3). The sequence of S1 through S3 can be repeated for a numerous amount of times and saved and closed there-after.

[2418] *<<Spreadsheet Function -- Summary>>*

[2419] The foregoing invention may be summarized as the following: A wireless communication device comprising a microphone, a speaker, an antenna, a display, an input device, a multiple mode implementer which is capable to implement a voice communication mode and a spreadsheet mode, wherein said multiple mode implementer enables said communication device to send via said antenna in a wireless fashion a series of input audio data input via said microphone and output a series of output audio data from said speaker received from said antenna in a wireless

fashion when said communication device is in said voice communication mode, and said multiple mode implementer enables said communication device to display on said display a spreadsheet comprising a plurality of cells in which a cell is selected by said input device and one or more of alphanumeric data are input to said cell by said input device which are displayed on said display when said communication device is in said spreadsheet mode.

[2420] *<<Word Processing Function>>*

[2421] Figs. 361 through 373 illustrate the word processing function of Communication Device 200. By way of implementing such function, Communication Device 200 can be utilized as a word processor which has the similar functions to Microsoft Words. The word processing function primarily includes the following functions: the bold formatting function, the italic formatting function, the image pasting function, the font formatting function, the spell check function, the underlining function, the page numbering function, and the bullets and numbering function. Here, the bold formatting function makes the selected alphanumeric data bold. The italic formatting function makes the selected alphanumeric data italic. The image pasting function pastes the selected image to a document

to the selected location. The font formatting function changes the selected alphanumeric data to the selected font. The spell check function fixes spelling and grammatical errors of the alphanumeric data in the document. The underlining function adds underlines to the selected alphanumeric data. The page numbering function adds page numbers to each page of a document at the selected location. The bullets and numbering function adds the selected type of bullets and numbers to the selected paragraphs.

[2422] Fig. 361 illustrates the software program installed in each Communication Device 200 to initiate the present function. First of all, a list of modes is displayed on LCD 201 (Fig. 1) (S1). When an input signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system to select a specific mode (S2), the selected mode is activated. In the present example, the communication mode is activated (S3a) when the communication mode is selected in the previous step, the game download mode and the game play mode are activated (S3b) when the game download mode and the game play mode are selected in the previous step of which the details are described in Fig. 137, and the word processing function is activated (S3c)

when the word processing function is selected in the previous step. The modes displayed on LCD 201 in S1 which are selectable in S2 and S3 may include all functions and modes explained in this specification. Once the selected mode is activated, another mode can be activated while the first activated mode is still implemented by going through the steps of S1 through S3 for another mode, thereby enabling a plurality of functions and modes being performed simultaneously (S4).

[2423] Fig. 362 illustrates the data stored in RAM 206 (Fig. 1). As described in Fig. 362, the data to activate (as described in S3a of the previous figure) and to perform the communication mode is stored in Communication Data Storage Area 2061a, the data to activate (as described in S3b of the previous figure) and to perform the game download mode and the game play mode are stored in Game DL/Play Data Storage Area 2061b/2061c of which the details are described in Fig. 138, and the data to activate (as described in S3c of the previous figure) and to perform the word processing function is stored in Word Processing Information Storage Area 20617a.

[2424] Fig. 363 illustrates the data stored in Word Processing Information Storage Area 20617a (Fig. 362). As described in

Fig. 363, Word Processing Information Storage Area 20617a includes Word Processing Software Storage Area 20617b and Word Processing Data Storage Area 20617c. Word processing Software Storage Area 20617b stores the software programs described in Fig. 364 hereinafter, and Word Processing Data Storage Area 20617c stores a plurality of data described in Fig. 365 hereinafter.

[2425] Fig. 364 illustrates the software programs stored in Word Processing Software Storage Area 20617b (Fig. 363). As described in Fig. 364, Word Processing Software Storage Area 20617b stores Alphanumeric Data Input Software 20617b1, Bold Formatting Software 20617b2, Italic Formatting Software 20617b3, Image Pasting Software 20617b4, Font Formatting Software 20617b5, Spell Check Software 20617b6, Underlining Software 20617b7, Page Numbering Software 20617b8, and Bullets And Numbering Software 20617b9. Alphanumeric Data Input Software 20617b1 inputs to a document a series of alphanumeric data in accordance to the input signals produced by utilizing Input Device 210 (Fig. 1) or via voice recognition system. Bold Formatting Software 20617b2 implements the bold formatting function which makes the selected alphanumeric data bold of which the sequence is described

in Fig. 366. Italic Formatting Software 20617b3 implements the italic formatting function which makes the selected alphanumeric data italic of which the sequence is described in Fig. 367. Image Pasting Software 20617b4 implements the image pasting function which pastes the selected image to a document to the selected location of which the sequence is described in Fig. 368. Font Formatting Software 20617b5 implements the font formatting function which changes the selected alphanumeric data to the selected font of which the sequence is described in Fig. 369. Spell Check Software 20617b6 implements the spell check function which fixes spelling and grammatical errors of the alphanumeric data in a document of which the sequence is described in Fig. 370. Underlining Software 20617b7 implements the underlining function which adds the selected underlines to the selected alphanumeric data of which the sequence is described in Fig. 371. Page Numbering Software 20617b8 implements the page numbering function which adds page numbers at the selected location to each page of a document of which the sequence is described in Fig. 372. Bullets And Numbering Software 20617b9 implements the bullets and numbering function which adds the selected type of bullets and num-

bers to the selected paragraphs of which the sequence is described in Fig. 373.

[2426] Fig. 365 illustrates the data stored in Word Processing Data Storage Area 20617c (Fig. 363). As described in Fig. 365, Word Processing Data Storage Area 20617c includes Alphanumeric Data Storage Area 20617c1, Bold Formatting Data Storage Area 20617c2, Italic Formatting Data Storage Area 20617c3, Image Data Storage Area 20617c4, Font Formatting Data Storage Area 20617c5, Spell Check Data Storage Area 20617c6, Underlining Data Storage Area 20617c7, Page Numbering Data Storage Area 20617c8, and Bullets And Numbering Data Storage Area 20617c9. Alphanumeric Data Storage Area 20617c1 stores the basic text and numeric data which are not decorated by bold and/or italic (the default font may be courier new). Bold Formatting Data Storage Area 20617c2 stores the text and numeric data which are decorated by bold. Italic Formatting Data Storage Area 20617c3 stores the text and numeric data which are decorated by italic. Image Data Storage Area 20617c4 stores the data representing the location of the image data pasted in a document and the image data itself. Font Formatting Data Storage Area 20617c5 stores a plurality of types of fonts,

such as arial, century, courier new, tahoma, and times new roman, of all text and numeric data stored in Alphanumeric Data Storage Area 20617c1. Spell check Data Storage Area 20617c6 stores a plurality of spell check data, i.e., a plurality of correct text and numeric data for purposes of being compared with the alphanumeric data input in a document and a plurality of pattern data for purposes of checking the grammatical errors therein. Underlining Data Storage Area 20617c7 stores a plurality of data representing underlines of different types. Page Numbering Data Storage Area 20617c8 stores the data representing the location of page numbers to be displayed in a document and the page number of each page of a document. Bullets And Numbering Data Storage Area 20617c9 stores a plurality of data representing different types of bullets and numbering and the location which they are added.

[2427] Fig. 365a illustrates the sequence of the software program stored in Alphanumeric Data Input Software 20617b1. As described in Fig. 365a, a plurality of alphanumeric data is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). The corresponding alphanumeric data is retrieved from Alphanumeric Data Storage Area

20617c1 (Fig. 365) (S2), and the document including the alphanumeric data retrieved in S2 is displayed on LCD 201 (Fig. 1) (S3).

[2428] Fig. 366 illustrates the sequence of the software program stored in Bold Formatting Software 20617b2. As described in Fig. 366, one or more of alphanumeric data are selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). Next, a bold formatting signal is input by utilizing Input Device 210 (e.g., selecting a specific icon displayed on LCD 201 (Fig. 1) or selecting a specific item from a pulldown menu) or via voice recognition system (S2). CPU 211 (Fig. 1) then retrieves the bold formatting data from Bold Formatting Data Storage Area 20617c2 (Fig. 365) (S3), and replaces the alphanumeric data selected in S1 with the bold formatting data retrieved in S3 (S4). The document with the replaced bold formatting data is displayed on LCD 201 thereafter (S5).

[2429] Fig. 367 illustrates the sequence of the software program stored in Italic Formatting Software 20617b3. As described in Fig. 367, one or more of alphanumeric data are selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). Next, an italic formatting signal is input by utilizing Input Device 210 (e.g., selecting a spe-

cific icon displayed on LCD 201 (Fig. 1) or selecting a specific item from a pulldown menu) or via voice recognition system (S2). CPU 211 (Fig. 1) then retrieves the italic formatting data from Italic Formatting Data Storage Area 20617c3 (Fig. 365) (S3), and replaces the alphanumeric data selected in S1 with the italic formatting data retrieved in S3 (S4). The document with the replaced italic formatting data is displayed on LCD 201 thereafter (S5).

[2430] Fig. 368 illustrates the sequence of the software program stored in Image Pasting Software 20617b4. As described in Fig. 368, the image to be pasted is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). Here, the image may be of any type, such as JPEG, GIF, and TIFF. Next the location in a document where the image is to be pasted is selected by utilizing Input Device 210 or via voice recognition system (S2). The data representing the location is stored in Image Pasting Data Storage Area 20617c4 (Fig. 365). The image is pasted at the location selected in S2 and the image is stored in Image Pasting Data Storage Area 20617c4 (S3). The document with the pasted image is displayed on LCD 201 (Fig. 1) thereafter (S4).

[2431] Fig. 369 illustrates the sequence of the software program

stored in Font Formatting Software 20617b5. As described in Fig. 369, one or more of alphanumeric data are selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). Next, a font formatting signal is input by utilizing Input Device 210 (e.g., selecting a specific icon displayed on LCD 201 (Fig. 1) or selecting a specific item from a pulldown menu) or via voice recognition system (S2). CPU 211 (Fig. 1) then retrieves the font formatting data from Italic Formatting Data Storage Area 20617c5 (Fig. 365) (S3), and replaces the alphanumeric data selected in S1 with the font formatting data retrieved in S3 (S4). The document with the replaced font formatting data is displayed on LCD 201 thereafter (S5).

[2432] Fig. 370 illustrates the sequence of the software program stored in Spell Check Software 20617b6. As described in Fig. 370, CPU 211 (Fig. 1) scans all alphanumeric data in a document (S1). CPU 211 then compares the alphanumeric data with the spell check data stored in Spell Check Data Storage Area 20617c6 (Fig. 365), i.e., a plurality of correct text and numeric data for purposes of being compared with the alphanumeric data input in a document and a plurality of pattern data for purposes of checking the grammatical errors therein (S2). CPU 211 corrects the al-

phanumeric data and/or corrects the grammatical errors (S3), and the document with the corrected alphanumeric data is displayed on LCD 201 (Fig. 1) (S4).

[2433] Fig. 371 illustrates the sequence of the software program stored in Underlining Software 20617b7. As described in Fig. 371, one or more of alphanumeric data are selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). Next, an underlining signal is input by utilizing Input Device 210 (e.g., selecting a specific icon displayed on LCD 201 (Fig. 1) or selecting a specific item from a pulldown menu) or via voice recognition system to select the type of the underline to be added (S2). CPU 211 (Fig. 1) then retrieves the underlining data from Underlining Data Storage Area 20617c7 (Fig. 365) (S3), and adds to the alphanumeric data selected in S1 (S4). The document with underlines added to the selected alphanumeric data is displayed on LCD 201 thereafter (S5).

[2434] Fig. 372 illustrates the sequence of the software program stored in Page Numbering Software 20617b8. As described in Fig. 372, a page numbering signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). Next, the location to display the page number is selected by utilizing Input Device 210 or via voice

recognition system (S2). CPU 211 (Fig. 1) then stores the location of the page number to be displayed in Page Numbering Storage Area 20617c8 (Fig. 365), and adds the page number to each page of a document at the selected location (S3). The document with page numbers is displayed on LCD 201 thereafter (S4).

[2435] Fig. 373 illustrates the sequence of the software program stored in Bullets And Numbering Software 20617b9. As described in Fig. 373, a paragraph is selected by utilizing input device 210 (Fig. 1) or via voice recognition system (S1). Next, the type of the bullets and/or numbering is selected by utilizing Input Device 210 or via voice recognition system (S2). CPU 211 (Fig. 1) then stores the identification data of the paragraph selected in S1 and the type of the bullets and/or numbering in Bullets And Numbering Data Storage Area 20617c9 (Fig. 365), and adds the bullets and/or numbering to the selected paragraph of a document (S3). The document with the bullets and/or numbering is displayed on LCD 201 thereafter (S4).

[2436] *<<TV Remote Controller Function>>*

[2437] Figs. 374 through 394 illustrate the TV remote controller function which enables Communication Device 200 to be utilized as a TV remote controller.

[2438] Fig. 374 illustrates the connection between Communication Device 200 and TV 802. As described in Fig. 374, Communication Device 200 is connected in a wireless fashion to Network NT, such as the Internet, and Network NT is connected to TV 802 in a wireless fashion. Communication Device 200 may be connected to TV 802 via one or more of artificial satellites, for example, in the manner described in Figs. 2a, 2b, and 2c. Communication Device 200 may also be connected to TV 802 via Sub-host as described in Fig. 75.

[2439] Fig. 375 illustrates another embodiment of connecting Communication Device 200 with TV 802. As described in Fig. 375, Communication Device 200 may directly connect to TV 802 in a wirelss fashion. Here, Communication Device 200 may utilize Antenna 218 (Fig. 1) and/or LED 219 as described in Fig. 380 hereinafter to be connected with TV 802 in a wireless fashion.

[2440] Fig. 376 illustrates the connection between Communication Device 200 and TV Server TVS. As described in Fig. 376, Communication Device 200 is connected in a wireless fashion to Network NT, such as the Internet, and Network NT is connected to TV Server TVS in a wireless fashion. Communication Device 200 may be connected to TV

Server TVS via one or more of artificial satellites and/or TV Server TVS may be carried by an artificial satellite, for example, in the manner described in Figs. 2a, 2b, and 2c.

[2441] Fig. 377 illustrates the data stored in TV Server TVS (Fig. 376). As described in Fig. 377, TV Server TVS includes TV Program Information Storage Area H18b of which the details are explained in Fig. 378 hereinafter, and TV Program Listing Storage Area H18c of which the details are explained in Fig. 379 hereinafter.

[2442] Fig. 378 illustrates the data stored in TV Program Information Storage Area H18b (Fig. 377). As described in Fig. 378, TV Program Information Storage Area H18b includes five types of data: 'CH', 'Title', 'Sum', 'Start', 'Stop', and 'Cat'. Here, 'CH' represents the channel number of the TV programs available on TV 802 (Fig. 375); 'Title' represents the title of each TV program; 'Sum' represents the summary of each TV program; 'Start' represents the starting time of each TV program; 'Stop' represents the ending time of each TV program, and 'Cat' represents the category to which each TV program pertains.

[2443] Fig. 379 illustrates the data stored in TV Program Listing Storage Area H18c (Fig. 377). As described in Fig. 379, TV Program Listing Storage Area H18c includes four types of

data: 'CH', 'Title', 'Start', and 'Stop'. Here, 'CH' represents the channel number of the TV programs available on TV 802 (Fig. 375); 'Title' represents the title of each TV program; 'Start' represents the starting time of each TV program; and 'Stop' represents the ending time of each TV program. The data stored in TV Program Listing Storage Area H18c are designed to be 'clipped' and to be displayed on LCD 201 (Fig. 1) of Communication Device 200 in the manner described in Figs. 389 and 391. As another embodiment, TV Program Listing Storage Area H18c may be combined with TV Program Information Storage Area H18b (Fig. 378) and extract the data of 'CH', 'Title', 'Start', and 'Stop' therefrom.

[2444] Fig. 380 illustrates the elements of Communication Device 200. The elements of Communication Device 200 described in Fig. 380 is identical to the ones described in Fig. 1, except Communication Device 200 has new element, i.e., LED 219. Here, LED 219 receives infra red signals from other wireless devices, which are transferred to CPU 211 via Data Bus 203. LED 219 also sends infra red signals in a wireless fashion which are composed by CPU 211 and transferred via Data Bus 203. As the second embodiment, LED 219 may be connected to Signal Processor

208. Here, LED 219 transfers the received infra red signals to Signal Processor 208, and Signal Processor 208 processes and converts the signals to a CPU readable format which are transferred to CPU 211 via Data Bus 203. The data produced by CPU 211 are processed by Signal Processor 208 and transferred to another device via LED 219 in a wireless fashion. The task of LED 219 is as same as that of Antenna 218 described in Fig. 1 except that LED 219 utilizes infra red signals for implementing wireless communication in the second embodiment. For the avoidance of doubt, the reference to Fig. 1 (e.g., referring to Fig. 1 in parenthesis) automatically refers to Fig. 380 in this specification.

[2445] Fig. 381 illustrates the software program installed in each Communication Device 200 to initiate the present function. First of all, a list of modes is displayed on LCD 201 (Fig. 1) (S1). When an input signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system to select a specific mode (S2), the selected mode is activated. In the present example, the communication mode is activated (S3a) when the communication mode is selected in the previous step, the game download mode and the game play mode are activated (S3b) when the game

download mode and the game play mode are selected in the previous step of which the details are described in Fig. 137, and the TV remote controller function is activated (S3c) when the TV remote controller function is selected in the previous step. The modes displayed on LCD 201 in S1 which are selectable in S2 and S3 may include all functions and modes explained in this specification. Once the selected mode is activated, another mode can be activated while the first activated mode is still implemented by going through the steps of S1 through S3 for another mode, thereby enabling a plurality of functions and modes being performed simultaneously (S4).

[2446] Fig. 382 illustrates the data stored in RAM 206 (Fig. 1). As described in Fig. 382, the data to activate (as described in S3a of the previous figure) and to perform the communication mode is stored in Communication Data Storage Area 2061a, the data to activate (as described in S3b of the previous figure) and to perform the game download mode and the game play mode are stored in Game DL/ Play Data Storage Area 2061b/2061c of which the details are described in Fig. 138, and the data to activate (as described in S3c of the previous figure) and to perform the TV remote controller function is stored in TV Remote

Controller Information Storage Area 20618a.

[2447] Fig. 383 illustrates the data stored in TV Remote Controller Information Storage Area 20618a. As described in Fig. 383, TV Remote Controller Information Storage Area 20618a includes TV Remote Controller Software Storage Area 20618b and TV Remote Controller Data Storage Area 20618c. TV Remote Controller Software Storage Area 20618b stores a plurlaity of software programs to implement the present function, such as the ones described in Figs. 386, 388, 390, 392, and 394, and TV Remote Controller Data Storage Area 20618c stores a plurality of data to implement the present function such as the ones described in Fig. 384 hereinafter.

[2448] Fig. 384 illustrates the data stored in TV Remote Controller Data Storage Area 20618c (Fig. 383). As described in Fig. 384, TV Remote Controller Data Storage Area 20618c includes, Channel List Data Storage Area 20618c1, TV Program Information Storage Area 20618c2, and TV Program Listing Storage Area 20618c3. Channel list Data Storage Area 20618c1 stores a list of channel numbers available on TV 802 (Fig. 375). TV Program Information Storage Area 20618c2 stores the data transferred from TV Program Information Storage Area H18b of

TV Server TVS (Fig. 377). The data stored in TV Program Information Storage Area 20618c2 is identical to the ones stored in TV Program Information Storage Area H18b or may be the portion thereof. TV Program Listing Storage Area 20618c3 stores the data transferred from TV Program Listing Storage Area H18c of TV Server TVS. The data stored in TV Program Listing Storage Area 20618c3 is identical to the ones stored in TV Program Listing Storage Area H18c or may be the portion thereof.

[2449] Fig. 385 illustrates the Channel Numbers 20118a displayed on LCD 201 (Fig. 380). Referring to Fig. 385, ten channel numbers are displayed on LCD 201, i.e., channel numbers '1' through '10'. The highlighted Channel Number 20118a is the one which is currently displayed on TV 802 (Fig. 375). In the present example, channel number 20188a '4' is highlighted, therefore, Channel 4 is currently shown on TV 802.

[2450] Fig. 386 illustrates one of the software programs stored in TV Remote Controller Software Storage Area 20618b (Fig. 383) to display and select Channel Number 20118a (Fig. 385). As described in Fig. 386, CPU 211 (Fig. 380) displays a channel list comprising a plurality of Channel Numbers 20118a on LCD 201 (Fig. 380) (S1). In the exam-

ple described in Fig. 384, ten channel numbers are displayed on LCD 201, i.e., channel numbers '1' through '10'. The user of Communication Device 200 inputs a channel selecting signal by utilizing Input Device 210 (Fig. 380) or via voice recogniation system (S2). CPU 211 highlights the selected channel in the manner described in Fig. 385 (S3), and sends to TV 802 (Fig. 375) via LED 209 in a wireless fashion the TV channel signal (S4). The TV program of Channel 4 is displayed on TV 802 (Fig. 375) thereafter.

[2451] Fig. 387 illustrates TV Program Information 20118c displayed on LCD 201 (Fig. 380). Referring to Fig. 387, when the user of Communication Device 200 inputs a specific signal utilizing Input Device 210 (Fig. 380) or via voice recognition system, TV Program Information 20118c currently shown on Channel Number 20118b selected in S2 of Fig. 386 is displayed on LCD 201. TV Program Information 20118c includes Channel Number 20118b, 'Title', 'Summary', 'Start Time', 'Stop Time', and 'Category'. Here, Channel Number 20118b represents the channel number of the TV program currently shown on Channel Number 20118b (i.e., the channel number selected in S2 of Fig. 386), 'Title'represents the title of the TV program currently shown on Channel Number 20118b, 'Sum-

mary'represents the summary of the TV program currently shown on Channel Number 20118b, 'Start Time'represents the starting time of the TV program currently shown on Channel Number 20118b, 'Stop Time' represents the ending time of the TV program currently shown on Channel Number 20118b, and 'Category' represents the category to which the TV program currently shown on Channel Number 20118b pertains.

[2452] Fig. 388 illustrates one of the software programs stored in TV Remote Controller Software Storage Area 20618b (Fig. 383) which displays TV Program Information 20118c (Fig. 387) on LCD 201 (Fig. 380). When the user of Communication Device 200 selects the TV program information display mode by utilizing Input Device 210 (Fig. 380) or via voice recognition system (S1), CPU 211 (Fig. 380) accesses TV Server TVS (Fig. 376) and retrieves the data (i.e., 'Title', 'Summary', 'Start Time', 'Stop Time', and 'Category' described in Fig. 387) of TV program currently shown on Channel Number 20118b (Fig. 387) from TV Program Information Storage Area H18b (Fig. 378) (S2), and displays as TV Program Information 20118c on LCD 201 as described in Fig. 387 (S3). TV Program Information 20118c may be web-based.

[2453] Fig. 389 illustrates TV Program Listing 20118d displayed on LCD 201 (Fig. 1). In Fig. 389, 'PRn' represents a title of a TV program, and 'CHn' represents Channel Number 20118a. Referring to the example described in Fig.389, TV Program Pr 1 is shown on Channel 1 and starts from 6:00 p.m. and ends at 7:00 p.m.; TV Program Pr 2 is shown on Channel 1 and starts from 7:00 p.m. and ends at 8:00 p.m.; TV Program Pr 3 is shown on Channel 1 and starts from 8:00 p.m. and ends at 9:00 p.m.; TV Program Pr 4 is shown on Channel 2 and starts from 6:00 p.m. and ends at 8:00 p.m.; TV Program Pr 5 is shown on Channel 2 and starts from 8:00 p.m. and ends at 9:00 p.m.; TV Program Pr 6 is shown on Channel 3 and starts from 6:00 p.m. and ends at 7:00 p.m.; and TV Program Pr 7 is shown on Channel 3 and starts from 7:00 p.m. and ends at 9:00 p.m. The TV program displayed on LCD 201 (Fig. 380) is selected by way of moving the cursor displayed thereon by utilizing Input Device 210 (Fig. 380) or via voice recognition system. In the present example, the cursor is located on TV Program Pr 2.

[2454] Fig. 390 illustrates one of the software programs stored in TV Remote Controller Software Storage Area 20618b (Fig. 383) which displays TV Program Listing 20118d (Fig. 389)

on LCD 201 (Fig. 380). As described in Fig. 390, when the user of Communication Device 200 selects TV program listing display mode by utilizing Input Device 210 (Fig. 380) or via voice recognition system (S1), CPU 211 (Fig. 380) accesses TV Server TVS (Fig. 376) and retrieves data (i.e., 'Title', 'Start Time', and 'Stop Time') from TV Program Listing Storage Area H18c (Fig. 379) (S2), and displays TV Program Listing 20118d (Fig. 389) on LCD 201 (S3). TV Program Listing 20118d may be web-based.

[2455] Fig. 391 illustrates TV Program Listing 20118d displayed on LCD 201 (Fig. 1) which enables to display TV Program Information 20118c of a selected TV program described in Fig. 393 hereinafter. In Fig. 391, 'PRn' represents a title of a TV program, and 'CHn' represents Channel Number 20118a. Referring to the example described in Fig.389, TV Program Pr 1 is shown on Channel 1 and starts from 6:00 p.m. and ends at 7:00 p.m.; TV Program Pr 2 is shown on Channel 1 and starts from 7:00 p.m. and ends at 8:00 p.m.; TV Program Pr 3 is shown on Channel 1 and starts from 8:00 p.m. and ends at 9:00 p.m.; TV Program Pr 4 is shown on Channel 2 and starts from 6:00 p.m. and ends at 8:00 p.m.; TV Program Pr 5 is shown on channel 2 and starts from 8:00 p.m. and ends at 9:00 p.m.; TV Pro-

gram Pr 6 is shown on Channel 3 and starts from 6:00 p.m. and ends at 7:00 p.m.; and TV Program Pr 7 is shown on Channel 3 and starts from 7:00 p.m. and ends at 9:00 p.m. The TV program displayed on LCD 201 (Fig. 1) is selected by way of utilizing the cursor displayed thereon. The cursor can be moved from one TV program to another one by utilzing Input Device 210 (Fig. 380) or via voice recognition system. In the present example, the cursor located on Pr 2 (as described in Fig. 389) is moved to Pr4.

[2456] Fig. 392 illustrates the sequence of displaying TV Program Information 20118c (Fig. 393) from TV Program Listing 20118d (Fig. 391). First, CPU 211 (Fig. 380) displays TV Program Listing 20118d (Fig. 391) on LCD 201 (Fig. 380) (S1). Next, the user of Communication Device 200 selects one of the TV programs listed in TV Program Listing 20118d by moving the cursor displayed on LCD 201 (S2). CPU 211 sends via Antenna 218 (Fig. 380) to TV Server TVS (Fig. 376) a TV program information request signal indicating TV Server TVS to send TV Program Information 20118c of the selected TV program (S3). CPU 211 retrieves TV Program Information 20118c from TV Server TVS via Antenna 218 (S4), and displays on LCD 201 thereafter as described in Fig. 393 (S5).

[2457] Fig. 393 illustrates TV Program Information 20118c displayed on LCD 201 (Fig. 380) which is retrieved in S4 of Fig. 392 hereinbefore. Referring to Fig. 393, TV Program Information 20118c includes Channel Number 20118b, 'Title', 'Summary', 'Start Time', 'Stop Time', and 'Category'. Here, Channel Number 20118b represents the channel number of the TV program selected in S2 of Fig. 392, 'Title'represents the title of the TV program selected in S2 of Fig. 392, 'Summary'represents the summary of the TV program selected in S2 of Fig. 392, 'Start Time'represents the starting time of the TV program selected in S2 of Fig. 392, 'Stop Time' represents the ending time of the TV program selected in S2 of Fig. 392, and 'Category' represents the category to which the TV program selected in S2 of Fig. 392 pertains.

[2458] Fig. 394 illustrates another embodiment of the method to display Channel Number 20118a. Instead of displaying all the available Channel Numbers 20118a as described in Fig. 385, only Channel Number 20118a currently shown on TV 802 (Fig. 375) may be displayed on LCD 201 (Fig. 380), Channel Number 20118a '4' in the present example.

[2459] *<< CD/PC Inter-communicating Function >>*

[2460] Figs. 413 through 427 illustrate the Communication De-

vice 200 / personal computer inter-communicating fuction (the CD/PC inter-communicating function) which enables Communication Device 200 to transfer LED transferable data (i.e., data transferable via LED 219 (Fig. 380)) to personal computers in a wireless fashion.

[2461] Fig. 413 illustrates the connection between Communication Device 200 and Personal Computer PC. As described in Fig. 413, Communication Device 200 is connected in a wireless fashion to Network NT, such as the Internet, and Network NT is connected to Personal Computer PC in a wireless fashion. Communication Device 200 may be connected to Personal Computer PC via one or more of artificial satellites, for example, in the manner described in Figs. 2a, 2b, and 2c. Communication Device 200 may also be connected to Personal Computer PC via sub-host in the manner described in Fig. 75.

[2462] Fig. 414 illustrates another embodiment of connecting Communication Device 200 with Personal Computer PC. As described in Fig. 414, Communication Device 200 may directly connect to Personal Computer PC in a wirelss fashion. Here, Communication Device 200 may utilize Antenna 218 (Fig. 1) and/or LED 219 as described in Fig. 380 hereinafter to be connected with Personal Computer

PC in a wireless fashion.

[2463] Fig. 415 illustrates the software program installed in each Communication Device 200 to initiate the present function. First of all, a list of modes is displayed on LCD 201 (Fig. 1) (S1). When an input signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system to select a specific mode (S2), the selected mode is activated. In the present example, the communication mode is activated (S3a) when the communication mode is selected in the previous step, the game download mode and the game play mode are activated (S3b) when the game download mode and the game play mode are selected in the previous step of which the details are described in Fig. 137, and the CD/PC inter-communicating function is activated (S3c) when the CD/PC inter-communicating function is selected in the previous step. The modes displayed on LCD 201 in S1 which are selectable in S2 and S3 may include all functions and modes explained in this specification. Once the selected mode is activated, another mode can be activated while the first activated mode is still implemented by going through the steps of S1 through S3 for another mode, thereby enabling a plurality of functions and modes being performed simultaneously (S4).

[2464] Fig. 416 illustrates the data stored in RAM 206 (Fig. 1). As described in Fig. 416, the data to activate (as described in S3a of the previous figure) and to perform the communication mode is stored in Communication Data Storage Area 2061a, the data to activate (as described in S3b of the previous figure) and to perform the game download mode and the game play mode are stored in Game DL/Play Data Storage Area 2061b/2061c of which the details are described in Fig. 138, and the data to activate (as described in S3c of the previous figure) and to perform the CD/PC inter-communicating function is stored in CD/PC Inter-communication Information Storage Area 20619a.

[2465] Fig. 417 illustrates the data stored in CD/PC Inter-communication Information Storage Area 20619a. As described in Fig. 417, CD/PC Inter-communication Information Storage Area 20619a includes CD/PC Inter-communication Software Storage Area 20619b and CD/PC inter-Communication Data Storage Area 20619c. CD/PC Inter-communication Software Storage Area 20619b stores a plurality of software programs to implement the present function, such as the ones described in Figs. 419 and 420, and CD/PC Inter-communication Data Storage Area 20619c stores a plurality of data to implement the

present function such as the one described in Fig. 418 hereinafter.

[2466] Fig. 418 illustrates the data stored in CD/PC Inter-communication Data Storage Area 20619c. As described in Fig. 418, CD/PC Inter-communication Data Storage Area 20619c includes LED Transferable Data Index Storage Area 20619c1, Selected LED Transferable Data Index Storage Area 20619c2, Received LED Transferable Data Storage Area 20619c3, and Non-LED Transferable Data Index Storage Area 20619c4. Here, LED Transferable Data Index Storage Area 20619c1 stores a plurality of LED transferable data indexes, i.e., unique information assigned to each LED transferable data as an identifier (e.g., a title of the data), Selected LED Transferable Data Index Storage Area 20619c2 stores one of the LED transferable data indexes stored in LED Transferable Data Index Storage Area 20619c1 which is selected by the user of Communication Device 200 by utilizing Input Device 210 (Fig. 1) or via voice recognition system, Received LED Transferable Data Storage Area 20619c3 stores a plurality of LED transferable data received from Personal Computer PC (Figs. 413 and/or 414), and Non-LED Transferable Data Index Storage Area 20619c4 stores the data which are not

transferable in a wireless fashion via LED 219 (Fig. 380).

[2467] Fig. 419 illustrates the sequence of the software program stored in CD/PC Inter-communication Software Storage Area 20619b (Fig. 417) to send the LED transferable data to Personal Computer PC (Figs. 413 and/or 414). Referring to Fig. 419, CPU 211 (Fig. 1) displays a list of LED transferable data on LCD 201 (Fig. 1) by retrieving LED transferable data index from LED Transferable Data Index Storage Area 20619c1 (Fig. 418) (S1). The user of Communication Device 200 selects one of the LED transferable data from the list by utilizing Input Device 210 (Fig. 1) or via voice recognition system, and CPU 211 stores the LED transferable data index of the selected LED transferable data in Selected LED Transferable Data Index Storage Area 20619c2 (Fig. 418) (S2). CPU 211 then retrieves the LED transferable data corresponding to the LED transferable data index from RAM 206 (Fig. 1) (S3), and transfers to Personal Computer PC (Figs. 413 and/or 414) via LED 219 (Fig. 1) in a wireless fashion (S4).

[2468] Fig. 420 illustrates the sequence of the software program stored in CD/PC Inter-communication Software Storage Area 20619b (Fig. 417) to receive the LED transferable data from Personal Computer PC (Figs. 413 and/or 414)

via LED 219 (Fig. 380). Referring to Fig. 420, CPU 211 (Fig. 1) selects a storage area in Received LED Transferable Data Storage Area 20619c3 (Fig. 418) to store the received LED transferable data. Selecting a storage area may be automatically performed by CPU 211 or by the user of Communication Device 200 by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). Next CPU 211 receives the LED transferable data from Personal Computer PC (S2), and stores it to the selected storage area identified in S1 (S3). CPU 211 displays the LED transferable data index of the stored LED transferable data on LCD 201 (Fig. 1) thereafter (S4).

[2469] Fig. 421 illustrates another embodiment of the data stored in CD/PC Inter-communication Data Storage Area 20619c. As described in Fig. 421, CD/PC Inter-communication Data Storage Area 20619c includes LED Transferable Data Storage Area 20619c5, Selected LED Transferable Data Storage Area 20619c6, Received LED Transferable Data Storage Area 20619c7, and Non-LED Transferable Data Storage Area 20619c8. Here, LED Transferable Data Storage Area 20619c5 stores a plurality of LED transferable data itself (instead of storing LED transferable data index), Selected LED Transferable Data

Storage Area 20619c6 stores one of the LED transferable data stored in LED Transferable Data Storage Area 20619c5 which is selected by the user of Communication Device 200 by utilizing Input Device 210 (Fig. 1) or via voice recognition system, Received LED Transferable Data Storage Area 20619c7, which is identical to Received LED Transferable Data Storage Area 20619c7 (Fig. 418), stores a plurality of LED transferable data received from Personal Computer PC (Figs. 413 and/or 414), and Non-LED Transferable Data Storage Area 20619c8 stores the data which are not transferable in a wireless fashion via LED 219 (Fig. 380).

[2470] Figs. 422 through 427 illustrate the data and software programs stored in Personal Computer PC (Figs. 413 and/or 414).

[2471] Fig. 422 illustrates the data stored in RAM (or hard disk) of Personal Computer PC (Figs. 413 and/or 414) which is not described in drawing figure. As described in Fig. 422, the data to activate and to perform the CD/PC inter-communicating function is stored in PC/CD Inter-communication Information Storage Area PC19a.

[2472] Fig. 423 illustrates the data stored in PC/CD Inter-communication Information Storage Area PC19a. As de-

scribed in Fig. 423, PC/CD Inter-communication Information Storage Area PC19a includes PC/CD Inter-communication Software Storage Area PC19b and PC/CD Inter-communication Data Storage Area PC19c. PC/CD Inter-communication Software Storage Area PC19b stores a plurlaity of software programs to implement the present function, such as the ones described in Figs. 425 and 426, and PC/CD Inter-communication Data Storage Area PC19c stores a plurality of data to implement the present function such as the one described in Fig. 424 hereinafter.

[2473] Fig. 424 illustrates the data stored in PC/CD Inter-Communication Data Storage Area PC19c. As described in Fig. 424, PC/CD Inter-communication Data Storage Area PC19c includes LED Transferable Data Index Storage Area PC19c1, Selected LED Transferable Data Index Storage Area PC19c2, Received LED Transferable Data Storage Area PC19c3, and Non-LED Transferable Data Index Storage Area PC19c4. Here, LED Transferable Data Index Storage Area PC19c1 stores a plurality of LED transferable data indexes, i.e., unique information assigned to each LED transferable data as an identifier (e.g., title of the data), Selected LED Transferable Data Index Storage Area PC19c2 stores one of the LED transferable data indexes

stored in LED Transferable Data Index Storage Area PC19c1 which is selected by the user of Personal Computer PC (Figs. 413 and/or 414) by utilizing input device (e.g., keyboard, mouse, and joystick), Received LED Transferable Data Storage Area PC19c3 stores a plurality of LED transferable data received from Communication Device 200, and Non-LED Transferable Data Index Storage Area PC19c4 stores the data which are not transferable in a wireless fashion via LED communication device installed in Personal Computer PC.

[2474] Fig. 425 illustrates the sequence of the software program stored in PC/CD Inter-communication Software Storage Area PC19b (Fig. 423) to send the LED transferable data to Communication Device 200. Referring to Fig. 425, the CPU of Personal Computer PC displays a list of LED transferable data on its monitor by retrieving LED transferable data index from LED Transferable Data Index Storage Area PC19c1 (Fig. 424) (S1). The user of Personal Computer PC (Figs. 413 and/or 414) selects one of the LED transferable data from the list by utilizing input device (e.g., keyboard, mouse, and joystick), and the CPU of Personal Computer PC stores the LED transferable data index of the selected LED transferable data in Selected LED Transferable Data

Index Storage Area PC19c2 (Fig. 424) (S2). The CPU of Personal Computer PC then retrieves the LED transferable data corresponding to the LED transferable data index from RAM of Personal Computer PC (S3), and transfers to Communication Device 200 via LED communication device in a wireless fashion (S4).

[2475] Fig. 426 illustrates the sequence of the software program stored in PC/CD Inter-communication Software Storage Area PC19b (Fig. 423) to receive the LED transferable data from Communication Device 200 via LED communication device. Referring to Fig. 426, the CPU of Personal Computer PC selects a storage area in Received LED Transferable Data Storage Area PC19c3 (Fig. 424) to store the received LED transferable data. Selecting a storage area may be automatically performed by the CPU of Personal Computer PC or by its user by utilizing input device (e.g., keyboard, mouse, and joystick) (S1). Next the CPU of Personal Computer PC receives the LED transferable data from Communication Device 200 (S2), and stores it to the selected storage area identified in S1 (S3). The CPU of Personal Computer PC displays the LED transferable data index of the stored LED transferable data on its monitor thereafter (S4).

[2476] Fig. 427 illustrates another embodiment of the data stored in PC/CD Inter-communication Data Storage Area PC19c. As described in Fig. 427, PC/CD Inter-communication Data Storage Area PC19c includes LED Transferable Data Storage Area PC19c5, Selected LED Transferable Data Storage Area PC19c6, Received LED Transferable Data Storage Area PC19c7, and Non-LED Transferable Data Storage Area PC19c8. Here, LED Transferable Data Storage Area PC19c5 stores a plurality of LED transferable data itself (instead of storing LED transferable data index), Selected LED Transferable Data Storage Area PC19c6 stores one of the LED transferable data stored in LED Transferable Data Storage Area PC19c5 which is selected by the user of Personal Computer PC by utilizing input device (e.g., keyboard, mouse, and/or joystick), Received LED Transferable Data Storage Area PC19c7, which is identical to Received LED Transferable Data Storage Area PC19c7 (Fig. 418), stores a plurality of LED transferable data received from Communication Device 200, and Non-LED Transferable Data Storage Area PC19c8 stores the data which are not transferable in a wireless fashion via LED communication device.

[2477] As another embodiment, Antenna 218 (Fig. 1) may be uti-

lized instead of LED 219 (Fig. 380) to send and receive LED transferable data. As another embodiment, the present function may be implemented between two Communication Devices 200 utilizing either Antenna 218 or LED 219. As another embodiment, the present function may be implemented between two personal computers PC utilzing either antenna or LED communication device.

[2478] *<< CD/PC Inter-communicating Function -- Summary>>*

[2479] The foregoing inventions may be summarized as the following.

[2480] (1) A software program installed in a communication device which enables said communication device to transfer a plurality of LED transferable data to a personal computer in a wireless fashion, said communication device comprises an LED wireless communicator, a display, an input device, wherein a list of a plurality of LED transferable data is displayed on said display, a selected LED transferable data is selected by the operation of said input device, and said selected LED transferable data is transferred to said personal computer via said LED wireless communicator.

[2481] (2) Said communication device in (1) further comprises a storage area comprising a LED Transferable Data Storage

Area and a Non-LED Transferable Data Storage Area, wherein said LED Transferable Data Storage Area stores a plurality of said LED transferable data which are capable to be transferred via said LED wireless communicator, and said Non-LED Transferable Data Storage Area stores a plurality of said non-LED transferable data which are not capable to be transferred via said LED wireless communicator.

[2482] (3) A 1st communication device which is capable to transfer a plurality of LED transferable data to a personal computer (or a 2nd communication device) in a wireless fashion, said 1st communication device (and/or said 2nd communication device) comprises an LED wireless communicator, a display, an input device, a microphone, a speaker, said 1st communication device (and/or said 2nd communication device) is capable to implement a CD/PC inter-communication mode and a voice communication mode, wherein a list of a plurality of LED transferable data is displayed on said display, a selected LED transferable data is selected by the operation of said input device, and said selected LED transferable data is transferred to said personal computer (or said 2nd communication device) via said LED wireless communicator when said communiction

device is in said CD/PC inter-communication mode, and a plurality of aural data are input to and out from said microphone and said speaker when said 1st communication device is in said voice communication mode.

[2483] (4) Said 1st communication device in (3) further comprises a mode activator which activates said CD/PC inter-communication mode and/or said voice communication mode.

[2484] *<< PDWR Sound Selecting Function>>*

[2485] Figs. 428 through 456 illustrate the pre-dialing/dialing/waiting sound Selecting Function (PDWR Sound Selecting Function) which enables Communication Device 200 to generate the pre-dialing sound, dialing sound, and waiting sound selected by the user thereof.

[2486] Fig. 428 illustrates the overall sequence of Communication Device 200 to generate the pre-dialing sound, dialing sound, and waiting sound. These sounds are generated when Communication Device 200 is in voice communication mode. Referring to Fig. 428, the user of Communication Device 200 selects the voice communication mode by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). Communication Device 200 outputs the pre-dialing sound via Speaker 216 (Fig. 1) when the voice

recognition system is activated and until the dialing process is initiated (S2). Next, Communication Device 200 outputs the dialing sound via Speaker 216 during the dialing process, i.e., when the user of Communication Device 200 is inputing a phone number by utilizing Input Device 210 or via voice recognition system (S3). Once the dialing process is completed, Communication Device 200 outputs the waiting sound via Speaker 216 (S4), until the line is connected at the other end and a voice communication is initiated (S5).

[2487] Fig. 429 illustrates the data stored in Host H. As described in Fig. 429, Host H includes Host Information Storage Area H00a which stores various types of data to assist and/or co-operate with Communication Device 200 to implement all modes, functions, and systems described in this specification, including data explained in Fig. 430 hereinafter. As another embodiment, Host H may be composed of a plurality of computers, i.e., one master computer and a plurality of slave computers, wherein the master computer is connected to the plurality of slave computers. As another embodiment, Host H may also be composed of a plurlaity of master computers by way of utilizing peer-to-peer connection.

[2488] Fig. 430 illustrates the data stored in Host Information Storage Area H00a described in Fig. 429. As described in Fig. 430, Host Information Storage Area H00a includes Host Software Storage Area H00b and Host Data Storage Area H00c. Here, Host Software Storage Area H00b stores all software programs necessary to implement the present function including the one illustrated in Fig. 431 hereinafter. Host Data Storage Area H00c stores all data necessary to implement the present function including the one illustrated in Fig. 434 hereinafter.

[2489] Fig. 431 illustrates the software programs stored in Host Software Storage Area H00b (Fig. 430). As described in Fig. 431, Host Software Storage Area H00b includes Com Device/Host Data Transfering Software Storage Area H00b1 and Host/Com Device Data Transfering Software Storage Area H00b2. Com Device/Host Data Transfering Software Storage Area H00b1 stores the software programs utilized when Host H (Fig. 429) recieves data from Communication Device 200. Host/Com Device Data Transfering Software Storage Area H00b2 stores the software programs utilized when Host H sends data to Communiction Device 200.

[2490] Fig. 432 illustrates the sequence of the software program

stored in Com Device/Host Data Transfering Software Storage Area H00b1 (Fig. 431). Taking a download request for example, Communication Device 200, first of all, sends a download request to Host H (Fig. 429) to download a specific data therefrom (S1). Next, Host H activates the software program stored in Com Device/Host Data Transfering Software Storage Area H00b1 to receive the download request from Communication Device 200 (S2).

[2491] Fig. 433 illustrates the sequence of the software program stored in Host/Com Device Data Transfering Software Storage Area H00b2 (Fig. 431). Taking the download request for example, Host H (Fig. 429), first of all, activates the software program stored in Host/Com Device Data Transfering Software Storage Area H00b2, which selects the data stored in Host Data Storage Area H00c (Fig. 430) specified in the download request (S1). Host H, under the command of the software program stored in Host/Com Device Data Transfering Software Storage Area H00b2, sends the data selected in S1 to Communication Device 200 (S2).

[2492] Fig. 434 illustrates the storage area included in Host Data Storage Area H00c (Fig. 430). As described in Fig. 434, Host Data Storage Area H00c includes PDWR Sound Selec-

tion Information Storage Area H20a which stores various types of sound data and software programs to implement the present function of which the information stored therein is explained in Fig. 435 hereinafter.

[2493] Fig. 435 illustrates the storage area included in PDWR Sound Selection Information Storage Area H20a (Fig. 434). As described in Fig. 435, PDWR Sound Selection Information Storage Area H20a includes PDWR Sound Selection Software Storage Area H20b and PDWR Sound Selection Data Storage Area H20c. Here, PDWR Sound Selection Software Storage Area H20b stores the software programs which are downloaded and utilized by Communication Device 200 such as the ones explained in Figs. 432 and 433 hereinbefore. PDWR Sound Selection Data Storage Area H20c stores a plurality of sound data, such as the ones explained in Figs. 436 through 440.

[2494] Fig. 436 illusterates the storage area included in PDWR Sound Selection Data Storage Area H20c (Fig. 435). As described in Fig. 436, PDWR Sound Selection Data Storage Area H20c includes Pre-dialing Sound Data Storage Area H20c1, Dialing Sound Data Storage Area H20c2, Waiting Sound Data Storage Area H20c3, and Ringing Sound Data Storage Area H20c4. Here, Pre-dialing Sound Data Storage

Area H20c1 stores a plurality of sound data explained in Fig. 437, Dialing Sound Data Storage Area H20c2 stores a plurality of sound data explained in Fig. 438, Waiting Sound Data Storage Area H20c3 stores a plurality of sound data explained in Fig. 439, and Ringing Sound Data Storage Area H20c4 stores a plurality of sound data explained in Fig. 440.

[2495] Fig. 437 illustrates the data stored in Pre-dialing Sound Data Storage Area H20c1 (Fig. 436). As described in Fig. 437, Pre-dialing Sound Data Storage Area H20c1 stores Pre-dialing Sound Data H20c1a, Pre-dialing Sound Data H20c1b, and Pre-dialing Sound Data H20c1c. In the present embodiment, Pre-dialing Sound Data H20c1a is a beeping sound, Pre-dialing Sound Data H20c1b is a tone sound, and Pre-dialing Sound Data H20c1c is a voice data of an actress. As another embodiment, a music melody, a hunk sound of an automobile, and a sound of siren may also be utilized instead. Various types of sound format may be utilized, including WAV format, and/or MP3 format.

[2496] Fig. 438 illustrates the data stored in Dialing Sound Data Storage Area H20c2 (Fig. 436). As described in Fig. 438, Dialing Sound Data Storage Area H20c2 stores Dialing

Sound Data H20c2a, Dialing Sound Data H20c2b, and Dialing Sound Data H20c2c. In the present embodiment, Dialing Sound Data H20c2a is a beeping sound, Dialing Sound Data H20c2b is a tone sound, and Dialing Sound Data H20c2c is a voice data of an actress. As another embodiment, a music melody, a hunk sound of an automobile, and a sound of siren may also be utilized instead. Various types of sound format may be utilized, including WAV format, and/or MP3 format.

[2497] Fig. 439 illustrates the data stored in Waiting Sound Data Storage Area H20c3 (Fig. 436). As described in Fig. 439, Waiting Sound Data Storage Area H20c3 stores Waiting Sound Data H20c3a, Waiting Sound Data H20c3b, and Waiting Sound Data H20c3c. In the present embodiment, Waiting Sound Data H20c3a is a beeping sound, Waiting Sound Data H20c3b is a tone sound, and Waiting Sound Data H20c3c is a voice data of an actress. As another embodiment, a music melody, a hunk sound of an automobile, and a sound of siren may also be utilized instead. Various types of sound format may be utilized, including WAV format, and/or MP3 format.

[2498] Fig. 440 illustrates the data stored in Ringing Sound Data Storage Area H20c4 (Fig. 436). As described in Fig. 440,

Ringing Sound Data Storage Area H20c4 stores Ringing Sound Data H20c4a, Ringing Sound Data H20c4b, and Ringing Sound Data H20c4c. In the present embodiment, Ringing Sound Data H20c4a is a beeping sound, Ringing Sound Data H20c4b is a tone sound, and Ringing Sound Data H20c4c is a voice data of an actress. As another embodiment, a music melody, a hunk sound of an automobile, and a sound of siren may also be utilized instead. Various types of sound format may be utilized, including WAV format, and/or MP3 format.

[2499] Fig. 441 illustrates the software program installed in Communication Device 200 to initiate the present function. First of all, a list of modes is displayed on LCD 201 (Fig. 1) (S1). When an input signal is input from Input Device 210 (Fig. 1) to select a specific mode (S2), the selected mode is activated. In the present example, the communication mode is activated (S3a) when the communication mode is selected in the previous step, the game download mode and the game play mode are activated (S3b) when the game download mode and the game play mode are selected in the previous step of which the details are described in Fig. 137, and the PDWR Sound Selecting Function is activated (S3c) when the PDWR Sound

Selecting Function is selected in the previous step. The modes displayed on LCD 201 in S1 which are selectable in S2 and S3 may include all functions and modes explained in this specification. Once the selected mode is activated, another mode can be activated while the first activated mode is still implemented by going through the steps of S1 through S3 for another mode, thereby enabling a plurality of functions and modes being performed simultaneously (S4).

[2500] Fig. 442 illustrates the data stored in RAM 206 (Fig. 1). As described in Fig. 442, the data to activate (as described in S3a of the previous figure) and to perform the communication mode is stored in communication data storage area 2061a, the data to activate (as described in S3b of the previous figure) and to perform the game download mode and the game play mode are stored in game DL/play data storage area 2061b/2061c of which the details are described in Fig. 138, and the data to activate (as described in S3c of the previous figure) and to perform the the PDWR Sound Selecting Function is stored in PDWR Sound Selection Information Storage Area 20620a.

[2501] Fig. 443 illustrates the storage area included in PDWR Sound Selection Information Storage Area 20620a (Fig.

442). As described in Fig. 443, PDWR Sound Selection Information Storage Area 20620a includes PDWR Sound Selection Software Storage Area 20620b, PDWR Sound Selection Data Storage Area 20620c, and PDWR Sound Data Index Storage Area 20620d. Here, PDWR Sound Selection Software Storage Area 20620b stores the software programs which are downloaded and utilized by Communication Device 200 of which the details are explained hereinafter. PDWR Sound Selection Data Storage Area 20620c stores a plurality of sound data explained in Figs. 444 through 448. PDWR Sound Data Index Storage Area 20620d stores sound data indexes which are identifiers of sound data selected in S2 through S4 of Fig. 454 hereinafter.

[2502] Fig. 444 illusterates the storage area included in PDWR Sound Selection Data Storage Area 20620c (Fig. 443). As described in Fig. 444, PDWR Sound Selection Data Storage Area 20620c includes Pre-dialing Sound Data Storage Area 20620c1, Dialing Sound Data Storage Area 20620c2, Waiting Sound Data Storage Area 20620c3, and Ringing Sound Data Storage Area 20620c4. Here, Pre-dialing Sound Data Storage Area 20620c1 stores a plurality of sound data explained in Fig. 445, Dialing Sound Data

Storage Area 20620c2 stores a plurality of sound data explained in Fig. 446, Waiting Sound Data Storage Area 20620c3 stores a plurality of sound data explained in Fig. 447, and Ringing Sound Data Storage Area 20620c4 stores a plurality of sound data explained in Fig. 448.

[2503] Fig. 445 illustrates the data stored in Pre-dialing Sound Data Storage Area 20620c1 (Fig. 444). As described in Fig. 445, Pre-dialing Sound Data Storage Area 20620c1 stores Pre-dialing Sound Data 20620c1a, Pre-dialing Sound Data 20620c1b, and Pre-dialing Sound Data 20620c1c. In the present embodiment, Pre-dialing Sound Data 20620c1a is a beeping sound, Pre-dialing Sound Data 20620c1b is a tone sound, and Pre-dialing Sound Data 20620c1c is a voice data of an actress. As another embodiment, a music melody, a hunk sound of an automobile, and a sound of siren may also be utilized instead. In addition, a voice data of the user of Communication Device 200 or a voice data of his/her friend recorded via microphone (Fig. 215) may be utilized. Various types of sound format may be utilized, including WAV format, and/or MP3 format.

[2504] Fig. 446 illustrates the data stored in Dialing Sound Data Storage Area 20620c2 (Fig. 444). As described in Fig. 446, Dialing Sound Data Storage Area 20620c2 stores Dialing

Sound Data 20620c2a, Dialing Sound Data 20620c2b, and Dialing Sound Data 20620c2c. In the present embodiment, Dialing Sound Data 20620c2a is a beeping sound, Dialing Sound Data 20620c2b is a tone sound, and Dialing Sound Data 20620c2c is a voice data of an actress. As another embodiment, a music melody, a hunk sound of an automobile, and a sound of siren may also be utilized instead. In addition, a voice data of the user of Communication Device 200 or a voice data of his/her friend recorded via microphone (Fig. 215) may be utilized. Various types of sound format may be utilized, including WAV format, and/or MP3 format.

[2505] Fig. 447 illustrates the data stored in Waiting Sound Data Storage Area 20620c3 (Fig. 444). As described in Fig. 447, Waiting Sound Data Storage Area 20620c3 stores Waiting Sound Data 20620c3a, Waiting Sound Data 20620c3b, and Waiting Sound Data 20620c3c. In the present embodiment, Waiting Sound Data 20620c3a is a beeping sound, Waiting Sound Data 20620c3b is a tone sound, and Waiting Sound Data 20620c3c is a voice data of an actress. As another embodiment, a music melody, a hunk sound of an automobile, and a sound of siren may also be utilized instead. In addition, a voice data of the user of Communica-

tion Device 200 or a voice data of his/her friend recorded via microphone (Fig. 215) may be utilized. Various types of sound format may be utilized, including WAV format, and/or MP3 format.

[2506] Fig. 448 illustrates the data stored in Ringing Sound Data Storage Area 20620c4 (Fig. 444). As described in Fig. 448, Ringing Sound Data Storage Area 20620c4 stores Ringing Sound Data 20620c4a, Ringing Sound Data 20620c4b, and Ringing Sound Data 20620c4c. In the present embodiment, Ringing Sound Data 20620c4a is a beeping sound, Ringing Sound Data 20620c4b is a tone sound, and Ringing Sound Data 20620c4c is a voice data of an actress. As another embodiment, a music melody, a hunk sound of an automobile, and a sound of siren may also be utilized instead. In addition, a voice data of the user of Communication Device 200 or a voice data of his/her friend recorded via microphone (Fig. 215) may be utilized. Various types of sound format may be utilized, including WAV format, and/or MP3 format.

[2507] Fig. 449 illustrates the sequence of the software program stored in PDWR Sound Selection Software Storage Area H20b (Fig. 435). Referring to Fig. 449, CPU 211 (Fig. 1) displays on LCD 201 (Fig. 1) a list of sound data down-

loadable from Host H (Fig. 429) in categories (i.e., pre-dialing sound data, dialing sound data, waiting sound data, and ringing sound data) (S1). Next, the user of Communication Device 200 selects by utilizing Input Device 210 (Fig. 1) or via voice recognition system one of the sound data to be downloaded (S2). CPU 211 selects one of the storage areas in PDWR Sound Selection Data Storage Area 20620c (Fig. 443) (S3), and CPU 211 stores the downloaded sound data therein (S4). For example, if the selected sound data is a pre-dialing sound data, the downloaded sound data is stored in Pre-dialing Sound Data Storage Area 20620c1 (Fig. 445). If the selected sound data is a dialing sound data, the downloaded sound data is stored in Dialing Sound Data Storage Area 20620c2 (Fig. 446). If the selected sound data is a waiting sound data, the downloaded sound data is stored in Waiting Sound Data Storage Area 20620c3 (Fig. 447). If the selected sound data is a ringing sound data, the downloaded sound data is stored in Ringing Sound Data Storage Area 20620c4 (Fig. 448).

[2508] Fig. 450 illustrates the list of sound data downlodable from Host H (Fig. 429) displayed on LCD 201 (Fig. 1) described in S1 of Fig. 449 hereinbefore. As described in Fig.

450, a list of sound data downloadable from Host H (Fig. 429) is displayed on LCD 201 in categories (i.e., pre-dialing sound data, dialing sound data, waiting sound data, and ringing sound data). The mark x illustrates that the corresponding sound data is already installed in PDWR Sound Selection Data Storage Area 20620c (Fig. 443). In the example described in Fig. 450, Pre-dialing Sound Data H20c1a and Pre-dialing Sound Data H20c1b stored in Pre-dialing Sound Data Storage Area H20c1 (Fig. 437), Dialing Sound Data H20c2a and Dialing Sound Data H20c2b stored in Dialing Sound Data Storage Area H20c2 (Fig. 438), Waiting Sound Data H20c3a and Waiting Sound Data H20c3b stored in Waiting Sound Data Storage Area H20c3 (Fig. 439), and Ringing Sound Data H20c4a and Ringing Sound Data H20c4b stored in Ringing Sound Data Storage Area H20c4 (Fig. 440) are already downloaded and stored in PDWR Sound Selection Data Storage Area 20620c.

[2509] Fig. 451 illustrates the list of sound data displayed on LCD 201 (Fig. 1) after being selected as described in S2 of Fig. 449 hereinbefore. Referring to Fig. 451, the user of Communication Device 200 selects by utilizing Input Device 210 (Fig. 1) or via voice recognition system the sound data to be downloaded. The selected sound data are

marked as DL as described in Fig. 451. In the example described in Fig. 450, Pre-dialing Sound Data H20c1c stored in Pre-dialing Sound Data Storage Area H20c1 (Fig. 437), Dialing Sound Data H20c2c stored in Dialing Sound Data Storage Area H20c2 (Fig. 438), Waiting Sound Data H20c3c stored in Waiting Sound Data Storage Area H20c3 (Fig. 439), and Ringing Sound Data H20c4c stored in Ringing Sound Data Storage Area H20c4 (Fig. 440) are selected in S2 of Fig. 449 to be downloaded. As a result, all sound data stored in PDWR Sound Selection Data Storage Area H20c, Pre-dialing Sound Data Storage Area H20c1, Dialing Sound Data Storage Area H20c2, and Waiting Sound Data Storage Area H20c3 of Host H (Fig. 429) are downloaded in Pre-dialing Sound Data Storage Area 20620c1, Dialing Sound Data Storage Area 20620c2, Waiting Sound Data Storage Area 20620c3, and Ringing Sound Data Storage Area 20620c4 of Communication Device 200, respectively. Here, each sound data stored in Communication Device 200 is identical to the one stored in Host H. For the avoidance of doubt, the sound data stored in Communication Device 200 do not need to be identical to the ones stored in Host H.

[2510] Fig. 452 illustrates another embodiment of the software

program stored in PDWR Sound Selection Software Storage Area H20b (Fig. 435) which enables to output sound data before storing in Communication Device 200. Referring to Fig. 452, CPU 211 (Fig. 1) displays on LCD 201 (Fig. 1) a list of sound data downloadable from Host H (Fig. 429) in categories (i.e., pre-dialing sound data, dialing sound data, waiting sound data, and ringing sound data) (S1). Next, the user of Communication Device 200 selects by utilizing Input Device 210 (Fig. 1) or via voice recognition system one of the sound data to be downloaded (S2). CPU 211 downloads the selected sound data in S2 (S3), and outputs it from Speaker 216 (Fig. 1) for demonstration when the user of Communication Device 200 inputs a specific signal by utilizing Input Device 210 (Fig. 1) or via voice recognition system which so indicates (S4). If CPU 211 detects a particular input signal input by the user of Communication Device 200 which indicates to store the sound data output in S4 (S5), CPU 211 selects one of the storage areas in PDWR Sound Selection Data Storage Area 20620c (Fig. 443) (S6), and stores the sound data therein (S7). For example, if the selected sound data is a pre-dialing sound data, the downloaded sound data is stored in Pre-dialing Sound Data Storage Area 20620c1 (Fig.

445). If the selected sound data is a dialing sound data, the downloaded sound data is stored in Dialing Sound Data Storage Area 20620c2 (Fig. 446). If the selected sound data is a waiting sound data, the downloaded sound data is stored in Waiting Sound Data Storage Area 20620c3 (Fig. 447). If the selected sound data is a ringing sound data, the downloaded sound data is stored in Ringing Sound Data Storage Area 20620c4 (Fig. 448).

[2511] Fig. 453 illustrates the method of selecting the sound data to be output via Speaker 216 (Fig. 1). Referring to Fig. 453, the user of Communication Device 200 selects by utilizing Input Device 210 (Fig. 1) or via voice recognition system the sound data to be output via Speaker 216. The selected sound data are marked as Sel as described in Fig. 453. In the example described in Fig. 453, Pre-dialing Sound Data H20c1c, Dialing Sound Data H20c2c, Waiting Sound Data H20c3c, and Ringing Sound Data H20c4c are selected to be output via Speaker 216.

[2512] Fig. 454 illustrates the software program stored in PDWR Sound Selection Software Storage Area H20b (Fig. 435) which implements the method described in Fig. 453 hereinbefore. Referring to Fig. 454, CPU 211 (Fig. 1) displays on LCD 201 (Fig. 1) a list of sound data in categories (i.e.,

pre-dialing sound data, dialing sound data, waiting sound data, and ringing sound data) (S1). Next, the user of Communication Device 200 selects by utilizing Input Device 210 (Fig. 1) or via voice recognition system the pre-dialing sound data (Pre-dialing Sound Data 20620c1c in the example described in Fig. 453) (S2), the dialing sound data (Dialing Sound Data 20620c2c in the example described in Fig. 453) (S3), the waiting sound data (Waiting Sound Data 20620c3c in the example described in Fig. 453) (S4), and the ringing sound data (Ringing Sound Data 20620c4c in the example described in Fig. 453), (S5). CPU 211 stores the sound data indexes of the sound data selected in S2 through S5 in PDWR Sound Data Index Storage Area 20620d (Fig. 443) (S6).

[2513] Fig. 455 illustrates the software program stored in PDWR Sound Selection Software Storage Area H20b (Fig. 435) which outputs the sound data selected in Fig. 454 hereinbefore until a voice communication is initated by the user of Communication Device 200. Referring to Fig. 455, the user of Communication Device 200 selects the voice communication mode by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). Then CPU 211 (Fig. 1) scans PDWR Sound Data Index Storage Area 20620d (Fig.

443) to identify the pre-dialing sound data selected in S2 of Fig. 454 (Pre-dialing Sound Data 20620c1c (Fig. 445) in the present example), which is output via Speaker 216 (Fig. 1) until the dialing process is initiated (S2). When the dialing process is initiated, CPU 211 scans PDWR Sound Data Index Storage Area 20620d to identify the dialing sound data selected in S3 of Fig. 454 (Dialing Sound Data 20620c2c (Fig. 446) in the present example), which is output via Speaker 216 during the dialing process (S3). Once the dialing process is completed, CPU 211 scans PDWR Sound Data Index Storage Area 20620d to identify the waiting sound data selected in S4 of Fig. 454 (Waiting Sound Data 20620c3c (Fig. 447) in the present example), which is output via Speaker 216 until the line is connected at the other end (S4). The voice communication is initiated thereafter (S5).

[2514] Fig. 456 illustrates the software program stored in PDWR Sound Selection Software Storage Area H20b (Fig. 435) which outputs the ringing sound data selected in S5 of Fig. 454 hereinbefore when receiving an incoming call. Referring to Fig. 456, CPU 211 (Fig. 1) periodically checks the wireless signals received via antenna 218 (Fig. 1) (S1). If the received wireless signal is an incoming call from an-

other device for voice communication purposes (S2), CPU 211 scans PDWR Sound Data Index Storage Area 20620d to identify the ringing sound data (Ringing Sound Data 20620c4c (Fig. 448) in the present example), which is output via Speaker 216 until the user of Communication Device 200 initiates a voice communication (S3).

[2515] *<< PDWR Sound Selecting Function -- Summary>>*

[2516] The foregoing inventions may be summarized as the following.

[2517] (1) A communication device which is capable to output a waiting sound data after a dialing process is completed and before said communication device initiates voice communication with other communication device, and which comprises a display, an input device, a speaker, wherein, a list of a plurality of said waiting sound data of different kinds is listed on said display, a certain waiting sound data is selected by utilizing said input device, said certain waiting sound data is output via said speaker after a dialing process is completed and before said communication device initiates voice communication with other communication device.

[2518] (2) An output waiting sound data implementing system comprising a host and a communication device, which en-

ables said communication device to output a waiting sound data after a dialing process is completed and before said communication device initiates voice communication with other communication device, said host comprises a data storage area which stores a plurality of said waiting sound data of different kinds, said host transfers said a plurality of said waiting sound data of different kinds to said communication device, said communication device comprises an antenna, a display, an input device, a speaker, wherein, said communication device downloads said a plurality of said waiting sound data of different kinds via said antenna, a list of said plurality of said waiting sound data of different kinds is listed on said display, a certain waiting sound data is selected from said list by utilizing said input device, said certain waiting sound data is output via said speaker after a dialing process is completed and before said communication device initiates voice communication with other communication device.

[2519] (3) An output waiting sound data implementing system comprising a host and a communication device, which enables said communication device to output a waiting sound data after a dialing process is completed and before said communication device initiates voice communi-

cation with other communication device, said host comprises a data storage area which stores a plurality of said waiting sound data of different kinds, said host transfers said a plurality of said waiting sound data of different kinds to said communication device, in order for said communication device to output a certain waiting sound data of said plurality of said waiting sound data of different kinds after a dialing process is completed and before said communication device initiates voice communication with other communication device.

[2520] (4) The concept of the foregoing summaries (1), (2), and (3) can also be applied to a pre-dialing sound data which is output before said dialing process is initiated, and a dialing sound data which is output when implementing said dialing process.

[2521] *<<Start Up Software Function>>*

[2522] Figs. 457 through 466 illustrate the start up software program function which enables Communication Device 200 to automatically activate (or start up) the registered software programs when the power is on.

[2523] Fig. 457 illustrates the overall sequence of the present function. Referring to Fig. 457, the user of Communication Device 200 presses the power button of Communica-

tion Device 200 (S1). Then the predetermined software programs automatically activate (or start up) without having any instructions from the user of Communication Device 200 (S2).

[2524] Fig. 458 illustrates the storage area included RAM 206 (Fig. 1). As described in Fig. 458, RAM 206 includes Start Up Information Storage Area 20621a which is described in Fig. 459 hereinafter.

[2525] Fig. 459 illustrates the storage areas included in Start Up Information Storage Area 20621a (Fig. 458). As described in Fig. 459, Start Up Information Storage Area 20621a includes Start Up Software Storage Area 20621b and Start Up Data Storage Area 20621c. Start Up Software Storage Area 20621b stores the software programs necessary to implement the present function, such as the ones described in Fig. 460 hereinafter. Start Up Data Storage Area 20621c stores the data necessary to implement the present function, such as the ones described in Fig. 462 hereinafter.

[2526] Fig. 460 illustrates the software programs stored in Start Up Software Storage Area 20621b (Fig. 459). As described in Fig. 460, Start Up Software Storage Area 20621b stores Power On Detecting Software 20621b1, Start Up Data

Storage Area Scanning Software 20621b2, and Start Up Software Activating Software 20621b3. Power On Detecting Software 20621b1 detects whether the power of Communication Device 200 is on of which the sequence is described in Fig. 463 hereinafter, Start Up Data Storage Area Scanning Software 20621b2 identifies the software programs which are automatically activated of which the sequence is described in Fig. 464 hereinafter, and Start Up Software Activating Software 20621b3 activates the identified software programs identified by Start Up Data Storage Area Scanning Software 20621b2 of which the sequence is described in Fig. 465 hereinafter.

[2527] Fig. 461 illustrates the storage area included in Start Up Data Storage Area 20621c (Fig. 459). As described in Fig. 461, Start Up Data Storage Area 20621c includes Start Up Software Index Storage Area 20621c1. Here, Start Up Software Index Storage Area 20621c1 stores the software program indexes, wherein a software program index is an unique information assigned to each software program as an identifier (e.g., title of a software program) of which the details are explained in Fig. 462 hereinafter.

[2528] Fig. 462 illustrates the data stored in Start Up Software Index Storage Area 20621c1 (Fig. 461). Referring to Fig.

462, Start Up Software Index Storage Area 20621c1 stores the software program indexes of the software programs which are automatically activated by the present function. Here, the software programs may be any software programs explained in this specification, and the storage areas where these software programs are stored are explained in the relevant drawing figures thereto. Three software program indexes, i.e., Start Up Software Index 20621c1a, Start Up Software Index 20621c1b, and Start Up Software Index 20621c1c, are stored in Start Up Software Index Storage Area 20621c1 in the present example. The software program indexes can be created and store in Start Up Software Index Storage Area 20621c1 manually by utilizing input device 210 (Fig. 1) or via voice recognition system.

[2529] Fig. 463 illustrates the sequence of Power On Detecting Software 20621b1 stored in Start Up Software Storage Area 20621b (Fig. 460). As described in Fig. 463, CPU 211 (Fig. 1) checks the status of the power condition of Communication Device 200 (S1). When the user of Communication Device 200 powers on Communication Device 200 by utilizing input device 210 (Fig. 1), such as by pressing a power button (S2), CPU 211 activates Start Up Data Stor-

age Area Scanning Software 20621b2 (Fig. 460) of which the sequence is explained in Fig. 464 hereinafter.

[2530] Fig. 464 illustrates the sequence of Start Up Data Storage Area Scanning Software 20621b2 stored in Start Up Software Storage Area 20621b (Fig. 460). As described in Fig. 464, CPU 211 (Fig. 1) scans Start Up Software Index Storage Area 20621c1 (Fig. 462) (S1), and identifies the software programs which are automatically activated (S2). CPU 211 activates Start Up Software Activating Software 20621b3 (Fig. 460) thereafter of which the sequence is explained in Fig. 465 hereinafter (S3).

[2531] Fig. 465 illustrates the sequence of Start Up Software Activating Software 20621b3 stored in Start Up Software Storage Area 20621b (Fig. 460). As described in Fig. 465, CPU 211 (Fig. 1) activates the software programs of which the software program indexes are identified in S2 of Fig. 464 hereinbefore (S1).

[2532] Fig. 466 illustrates another embodiment wherein the three software programs stored in Start Up Software Storage Area 20621b (Fig. 460) (i.e., Power On Detecting Software 20621b1, Start Up Data Storage Area Scanning Software 20621b2, Start Up Software Activating Software 20621b3) is integrated into one software program stored therein.

Referring to Fig. 466, CPU 211 (Fig. 1) checks the status of the power condition of Communication Device 200 (S1). When the user of Communication Device 200 powers on Communication Device 200 by utilizing input device 210 (Fig. 1), such as by pressing a power button (S2), CPU 211 scans Start Up Software Index Storage Area 20621c1 (Fig. 461) (S3), and identifies the software programs which are automatically activated (S4). CPU 211 activates the software programs thereafter of which the software program indexes are identified in S4 (S5).

[2533] As another embodiment, the software programs per se (not the software program indexes as described in Fig. 462) may be stored in a specific storage area which are activated by the present function.

[2534] As another embodiment, the present function may be implemented at the time the user of Communication Device 200 logs on instead of at the time the Communication Device 200 is powered as described in S2 of Fig. 463.

[2535] *<<Start Up Software Function -- Summary>>*

[2536] The foregoing inventions may be summarized as the following.

[2537] A communication device comprising a power button, a CPU, a software program storage means, a software pro-

gram index storage area, said software program storage means stores one or more of software programs, said software program index storage area stores one or more of software program indexes, wherein, at the time said power button is pressed, said CPU scans said software program index storage area, and activates software programs stored in said software program storage means identified by said one or more of software program indexes.

[2538] *<<Another Embodiment Of Communication Device 200>>*

[2539] Figs. 467a through 467d illustrate another embodiment of Communication Device 200 described in Figs. 1 and 380. Referring to Figs. 467a through 467d, CPU 211 controls and administers the overall function and operation of Communication Device 200. CPU 211 utilizes RAM 206 as a work area to perform calculation, and to implement the modes, functions, and systems explained in this specification. Video Processor 202 generates stereo video signals. Wireless Transmitter 222 transmits the stereo video signals generated by Video Processor 202 in a wireless fashion, which is received by Wireless Receiver 224. Data Bus 203 is composed of Data Bus 203a, Data Bus 203b, and Data Bus 203c as described in the present draawing.

LCD 201L and LCD 201R display the received stereo video signals in a stereo fashion. ROM 207 stores the data and software programs which are essential to operate Communication Device 200. Wireless signals are received by Antenna 218 and processed by Signal Processor 208. Input signals are input by Input Device 210, such as a dial pad, a joystick, and/or a keypad, and the input signals are transferred via Input Interface 209 and Data Bus 203 to CPU 211. Indicator 212 is an LED lamp which is designed to output different colors (e.g., red, blue, and green, etc). Stereo audio data are input to Microphone 215L and Microphone 215R in a stereo fashion. The input stereo audio data are transferred via Wireless Transmitter 227 in a wireless fashion to Wireless Receiver 226. Wireless Receiver 226 transfers the received stereo audio data to Signal Processor 205. Signal Processor 205 processes the received stereo audio data under the control of CPU 211. Signal Processor 205 also generates stereo audio data under the control of CPU 211 which are transferred via Wireless Transmitter 223 in a wireless fashion to Wireless Receiver 225. Wireless Receiver 225 transfers the received stereo audio data to Speaker 216L and Speaker 216R, which output stereo audio data in a stereo fashion. CCD

Unit 214 captures video images which are stored in RAM 206 in a digital format. Vibrator 217 vibrates Communication Device 200 under the command of CPU 211. LED 219 receives infra red signals from other wireless devices, which are transferred to CPU 211 via Data Bus 203. LED 219 also sends infra red signals in a wireless fashion which are composed by CPU 211 and transferred via Data Bus 203. As a second embodiment, LED 219 may be connected to Signal Processor 208. Here, LED 219 transfers the received infra red signals to Signal Processor 208, and Signal Processor 208 processes and converts the signals to a CPU readable format which are transferred to CPU 211 via Data Bus 203. The data produced by CPU 211 are processed by Signal Processor 208 and transferred to another device via LED 219 in a wireless fashion. The task of LED 219 is as same as that of Antenna 218 except that LED 219 utilizes infra red signals for implementing wireless communication in the second embodiment. Flash Light Unit 220 emits light under the command of CPU 211 transferred via Data Bus 203, which is utilized for flash light purposes and as a strobe unit when taking videos and/or photos by CCD Unit 214. Memory Card 228 is a removable or detachable storage media which stores any

information, data, and/or software program, and is accessed by CPU 211 via Memory Card Interface 221. Memory Card 228 may be utilized as a substitute of RAM 206. Photometer 232 is a sensor which detects the brightness (i.e., the light intensity). LCD 201L, LCD 201R are wearable and/or head-mountable as described in the following patents and the references cited thereof: U.S. Pat. No. 6,496,161; U.S. Pat. No. 6,487,021; U.S. Pat. No. 6,462,882; U.S. Pat. No. 6,452,572; U.S. Pat. No. 6,448,944; U.S. Pat. No. 6,445,364; U.S. Pat. No. 6,445,363; U.S. Pat. No. 6,424,321; U.S. Pat. No. 6,421,183; U.S. Pat. No. 6,417,820; U.S. Pat. No. 6,388,814; U.S. Pat. No. 6,388,640; U.S. Pat. No. 6,369,952; U.S. Pat. No. 6,359,603; U.S. Pat. No. 6,359,602; U.S. Pat. No. 6,356,392; U.S. Pat. No. 6,353,503; U.S. Pat. No. 6,349,001; U.S. Pat. No. 6,329,965; U.S. Pat. No. 6,304,303; U.S. Pat. No. 6,271,808; U.S. Pat. No. 6,246,383; U.S. Pat. No. 6,239,771; U.S. Pat. No. 6,232,934; U.S. Pat. No. 6,222,675; U.S. Pat. No. 6,219,186; U.S. Pat. No. 6,204,974; U.S. Pat. No. 6,181,304; U.S. Pat. No. 6,160,666; U.S. Pat. No. 6,157,291; U.S. Pat. No. 6,147,807; U.S. Pat. No. 6,147,805; U.S. Pat. No.

6,140,980; U.S. Pat. No. 6,127,990; U.S. Pat. No. 6,124,837; U.S. Pat. No. 6,115,007; U.S. Pat. No. 6,097,543; U.S. Pat. No. 6,094,309; U.S. Pat. No. 6,094,242; U.S. Pat. No. 6,091,546; U.S. Pat. No. 6,084,556; U.S. Pat. No. 6,072,445; U.S. Pat. No. 6,055,110; U.S. Pat. No. 6,055,109; U.S. Pat. No. 6,050,717; U.S. Pat. No. 6,040,945; U.S. Pat. No. 6,034,653; U.S. Pat. No. 6,023,372; U.S. Pat. No. 6,011,653; U.S. Pat. No. 5,995,071; U.S. Pat. No. 5,991,085; U.S. Pat. No. 5,982,343; U.S. Pat. No. 5,971,538; U.S. Pat. No. 5,966,242; U.S. Pat. No. 5,959,780; U.S. Pat. No. 5,954,642; U.S. Pat. No. 5,949,583; U.S. Pat. No. 5,943,171; U.S. Pat. No. 5,923,476; U.S. Pat. No. 5,903,396; U.S. Pat. No. 5,903,395; U.S. Pat. No. 5,900,849; U.S. Pat. No. 5,880,773; U.S. Pat. No. 5,864,326; U.S. Pat. No. 5,844,656; U.S. Pat. No. 5,844,530; U.S. Pat. No. 5,838,490; U.S. Pat. No. 5,835,279; U.S. Pat. No. 5,822,127; U.S. Pat. No. 5,808,802; U.S. Pat. No. 5,808,801; U.S. Pat. No. 5,774,096; U.S. Pat. No. 5,767,820; U.S. Pat. No. 5,757,339; U.S. Pat. No. 5,751,493; U.S. Pat. No. 5,742,264; U.S. Pat. No. 5,739,955; U.S. Pat. No. 5,739,797; U.S. Pat. No.

5,708,449; U.S. Pat. No. 5,673,059; U.S. Pat. No. 5,670,970; U.S. Pat. No. 5,642,221; U.S. Pat. No. 5,619,377; U.S. Pat. No. 5,619,373; U.S. Pat. No. 5,606,458; U.S. Pat. No. 5,572,229; U.S. Pat. No. 5,546,099; U.S. Pat. No. 5,543,816; U.S. Pat. No. 5,539,422; U.S. Pat. No. 5,537,253; U.S. Pat. No. 5,526,184; U.S. Pat. No. 5,486,841; U.S. Pat. No. 5,483,307; U.S. Pat. No. 5,341,242; U.S. Pat. No. 5,281,957; and U.S. Pat. No. 5,003,300. As another embodiment, LCD 201L, LCD 201R, Wireless Receiver 224, and Video Processor 202 may be integrated into one unit. Solar Panel 229 is a panel which converts sunlight to electricity, under the control of CPU 211. Solar Panel 229 is connected to Battery 230 by a cable (not shown in the drawing) to charge Battery 230. The concept of the mechanism and the utilization of Solar Panel 229 and Battery 230 are introduced in the following invention and the references cited thereof: U.S. Pat. No. 5,542,203.

[2540] When Communication Device 200 is in a voice communication mode, the stereo audio data input to Microphone 215L and Microphone 215R are transferred to another device via Antenna 218 (or LED 219) in a wireless fashion after being processed by Signal Processor 208, and the

wireless signal representing the stereo audio data which are received via Antenna 218 (or LED 219) is output from Speaker 216L and Speaker 216R after being processed by Signal Processor 208. Communication Device 200 is also capable to process monoral audio data. Namely, when Communication Device 200 is in a voice communication mode, the monoral audio data input to Microphone 215L and/or Microphone 215R are transferred to another device via Antenna 218 (or LED 219) in a wireless fashion after being processed by Signal Processor 208, and the wireless signal representing the monoral audio data which are received via Antenna 218 (or LED 219) is output from Speaker 216L and/or Speaker 216R after being processed by Signal Processor 208.

[2541] For the avoidance of doubt, the definition of Communication Device 200 in this specification includes so-called 'PDA'. The definition of Communication Device 200 also includes in this specification any device which is mobile and/or portable and which is capable to send and/or receive audio data, text data, image data, video data, and/or other types of data in a wireless fashion via Antenna 218 (or LED 219). The size of Communication Device 200 is irrelevant so long as it is mobile and/or portable.

[2542] For the avoidance of doubt, the reference to Fig. 1 (e.g., referring to Fig. 1 in parenthesis) automatically refers to Fig. 380 and to Figs. 467a through 467d in this specification; the reference to Fig. 380 (e.g., referring to Fig. 380 in parenthesis) automatically refers to Fig. 1 and to Figs. 467a through 467d in this specification; and the reference to Fig. 467 (e.g., referring to Fig. 467 in parenthesis) automatically refers to Fig. 1 and to Fig. 380 in this specification.

[2543] *<<Stereo Audio Data Output Function>>*

[2544] Figs. 468 through 479 illustrate the stereo audio data output function which enables Communication Device 200 to output audio data from Speakers 216L and 216R (Fig. 467c) in a stereo fashion.

[2545] Fig. 468 illustrates the storage area included in Host Data Storage Area H00c (Fig. 430) of Host H (Fig. 429). As described in Fig. 468, Host Data Storage Area H00c includes Stereo Audio Information Storage Area H22a. Stereo Audio Information Storage Area H22a stores the software programs and data necessary to implement the present function as described in details hereinafter.

[2546] Fig. 469 illustrates the storage areas included in Stereo Audio Information Storage Area H22a (Fig. 468). As de-

scribed in Fig. 469, Stereo Audio Information Storage Area H22a includes Stereo Audio Software Storage Area H22b and Stereo Audio Data Storage Area H22c. Stereo Audio Software Storage Area H22b stores the software programs necessary to implement the present function, such as the one described in Fig. 472 hereinafter. Stereo Audio Data Storage Area H22c stores the data necessary to implement the present function, such as the ones described in Fig. 470 hereinafter.

[2547] Fig. 470 illustrates the stereo audio data stored in Stereo Audio Data Storage Area H22c (Fig. 469). A plurality of stereo audio data are stored in Stereo Audio Data Storage Area H22c. In the example described in Fig. 470, three stereo audio data, i.e., Stereo Audio Data H22c1, Stereo Audio Data H22c2, and Stereo Audio Data H22c3 are stored therein.

[2548] Fig. 471 illustrates the components of the stereo audio data stored in Stereo Audio Data Storage Area H22c (Fig. 470). Fig. 471 describes the components of Stereo Audio Data H22c1 (Fig. 470) as an example. As described in Fig. 471, Stereo Audio Data H22c1 includes Left Speaker Audio Data H22c1L, Right Speaker Audio Data H22c1R, and Stereo Audio Data Output Timing Data H22c1T. Left

Speaker Audio Data H22c1L is an audio data which is designed to be output from Speaker 216L (Fig. 467c). Right Speaker Audio Data H22c1R is an audio data which is designed to be output from Speaker 216R (Fig. 467c). Stereo Audio Data Output Timing Data H22c1T is a timing data which is utilized to synchronize the output of both Left Speaker Audio Data H22c1L and Right Speaker Audio Data H22c1R from Speaker 216R and Speaker 216L respectively.

[2549] Fig. 472 illustrates the sequence of the software program stored in Stereo Audio Software Storage Area H22b (Fig. 469). Referring to Fig. 472, the software program stored in Stereo Audio Software Storage Area H22b extracts one of the stereo audio data stored in Stereo Audio Data Storage Area H22c (Fig. 470) and creates Transferred Stereo Audio Data TSAD for purposes of transferring the extracted stereo audio data to Communication Device 200 (S1).

[2550] Fig. 473 illustrates the components of Transferred Stereo Audio Data TSAD created by the software program stored in Stereo Audio Software Storage Area H22b (Fig. 472). As described in Fig. 473, Transferred Stereo Audio Data TSAD is composed of Header TSAD1, Com Device ID TSAD2,

Host ID TSAD3, Transferred Stereo Audio Data TSAD4, and Footer TSAD5. Com Device ID TSAD2 indicates the identification of Communication Device 200, Host ID TSAD3 indicates the identification of Host H (Fig. 429), and Transferred Stereo Audio Data TSAD4 is the stereo audio data extracted in the manner described in Fig. 472. Header TSAD1 and Footer TSAD5 indicate the beginning and the end of Transferred Stereo Audio Data TSAD.

[2551] Fig. 474 illustrates the storage area included in RAM 206 (Fig. 1) of Communication Device 200 (Fig. 429). As described in Fig. 474, RAM 206 includes Stereo Audio Information Storage Area 20622a. Stereo Audio Information Storage Area 20622a stores the software programs and data necessary to implement the present function as described in details hereinafter.

[2552] Fig. 475 illustrates the storage areas included in Stereo Audio Information Storage Area 20622a (Fig. 474). As described in Fig. 475, Stereo Audio Information Storage Area 20622a includes Stereo Audio Software Storage Area 20622b and Stereo Audio Data Storage Area 20622c. Stereo Audio Software Storage Area 20622b stores the software programs necessary to implement the present function, such as the ones described in Figs. 478 and 479

hereinafter. Stereo Audio Data Storage Area 20622c stores the data necessary to implement the present function, such as the ones described in Fig. 476 hereinafter.

[2553] Fig. 476 illustrates the stereo audio data stored in Stereo Audio Data Storage Area 20622c (Fig. 475). A plurality of stereo audio data are stored in Stereo Audio Data Storage Area 20622c. In the example described in Fig. 476, three stereo audio data, i.e., Stereo Audio Data 20622c1, Stereo Audio Data 20622c2, and Stereo Audio Data 20622c3 are stored therein.

[2554] Fig. 477 illustrates the components of the stereo audio data stored in Stereo Audio Data Storage Area 20622c (Fig. 476). Fig. 477 describes the components of Stereo Audio Data 20622c1 (Fig. 476) as an example. As described in Fig. 477, Stereo Audio Data 20622c1 includes Left Speaker Audio Data 20622c1L, Right Speaker Audio Data 20622c1R, and Stereo Audio Data Output Timing Data 20622c1T. Left Speaker Audio Data 20622c1L is an audio data which is designed to be output from Speaker 216L (Fig. 467c). Right Speaker Audio Data 20622c1R is an audio data which is designed to be output from Speaker 216R (Fig. 467c). Stereo Audio Data Output Timing Data 20622c1T is a timing data which is utilized to

synchronize the output of both Left Speaker Audio Data 20622c1L and Right Speaker Audio Data 20622c1R from Speaker 216R and Speaker 216L respectively.

[2555] With regard to the process of selecting and downloading the stereo audio data to Communication Device 200, the concept illustrated in Figs. 401 through 407 applies hereto. The downloaded stereo audio data are stored in specific area(s) of Stereo Audio Data Storage Area 20622c (Fig. 476).

[2556] Fig. 478 illustrates the sequence of selecting and preparing to output the stereo audio data from Speakers 216L and 216R (Fig. 467c) in a stereo fashion. As described in Fig. 478, a list of stereo audio data is displayed on LCD 201 (Fig. 1) (S1). The user of Communication Device 200 selects one stereo audio data by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2). Assuming Stereo Audio Data 20622c1 is selected (Fig. 476) in S2, CPU 211 (Fig. 1) retrieves Left Speaker Audio Data 20622c1L (S3), Right Speaker Audio Data 20622c1R (S4), and Stereo Audio Data Output Timing Data 20622c1T from Stereo Audio Data Storage Area 20622c (Fig. 476) (S5).

[2557] Fig. 479 illustrates the sequence of outputting the stereo

audio data from Speakers 216L and 216R (Fig. 467c) in a stereo fashion. As described in Fig. 479, the user of Communication Device 200 inputs a specific signal to output the stereo audio data by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). Assuming Audio Data 20622c1 (Fig. 476) is selected in S2 of Fig. 478, CPU 211 outputs Left Speaker Audio Data 20622c1L (Fig. 477) and Right Speaker Audio Data 20622c1R (Fig. 477) from Speakers 216L and 216R respectively in a stereo fashion in accordance with Stereo Audio Data Output Timing Data 20622c1T (Fig. 477) (S2).

[2558] *<<Stereo Audio Data Output Function -- Summary>>*

[2559] The foregoing inventions may be summarized as the following.

[2560] (1) A communication device comprising a wireless communication unit, a microphone, a left speaker, a right speaker, a display, and an input device, wherein said communication device functions in a voice communication mode and a stereo audio data output mode, said microphone is utilized for inputting audio data of a first person which is transferred via said wireless communication unit, and said left speaker, and said right speaker are utilized for outputting audio data of a second person when said

communication device is in said voice communication mode, a list of stereo audio data is displayed on said display, a selected stereo audio data is selected from said list via said input device, said selected stereo audio data is output from said left speaker and said right speaker in a stereo fashion when said communication device is in said stereo audio data output mode.

[2561] (2) A host comprising a stereo audio data storage area in which a plurality of stereo audio data are stored, said host is capable to send and receive data, wherein said host retrieves from said stereo audio data storage area and sends a selected stereo audio data requested by a request data sent by said wireless communication device to said wireless communication device for purposes of said communication device to receive said selected stereo audio data via a wireless communication unit and output said selected stereo audio data from a left speaker and a right speaker of said wireless communication device when said wireless communication device is in a stereo audio data output mode.

[2562] (3) A stereo audio data output system comprising a host and a communication device, said host comprises a stereo audio data storage area in which a plurality of stereo au-

dio data are stored, said host is capable to send and receive data with a wireless communication device, said host retrieves from said stereo audio data storage area and sends a selected stereo audio data requested by a request data sent by said wireless communication device to said wireless communication device, said communication device comprises a wireless communication unit, a microphone, a left speaker, a right speaker, a display, and an input device, said communication device functions in a voice communication mode and a stereo audio data output mode, said microphone is utilized for inputting audio data of a first person which is transferred via said wireless communication unit, and said left speaker, and said right speaker are utilized for outputting audio data of a second person when said communication device is in said voice communication mode, said selected stereo audio data is output from said left speaker and said right speaker in a stereo fashion when said communication device is in said stereo audio data output mode.

[2563] *<<Stereo Visual Data Output Function>>*

[2564] Figs. 480 through 491 illustrate the stereo visual data output function which enables Communication Device 200 to output visual data from LCDs 201L and 201R (Fig.

467b) in a stereo fashion.

[2565] Fig. 480 illustrates the storage area included in Host Data Storage Area H00c (Fig. 430) of Host H (Fig. 429). As described in Fig. 480, Host Data Storage Area H00c includes Stereo Visual Information Storage Area H23a. Stereo Visual Information Storage Area H23a stores the software programs and data necessary to implement the present function as described in details hereinafter.

[2566] Fig. 481 illustrates the storage areas included in Stereo Visual Information Storage Area H23a (Fig. 480). As described in Fig. 481, Stereo Visual Information Storage Area H23a includes Stereo Visual Software Storage Area H23b and Stereo Visual Data Storage Area H23c. Stereo Visual Software Storage Area H23b stores the software programs necessary to implement the present function, such as the one described in Fig. 484 hereinafter. Stereo Visual Data Storage Area H23c stores the data necessary to implement the present function, such as the ones described in Fig. 482 hereinafter.

[2567] Fig. 482 illustrates the stereo visual data stored in Stereo Visual Data Storage Area H23c (Fig. 481). A plurality of stereo visual data are stored in Stereo Visual Data Storage Area H23c. In the example described in Fig. 482, three

stereo visual data, i.e., Stereo Visual Data H23c1, Stereo Visual Data H23c2, and Stereo Visual Data H23c3 are stored therein.

[2568] Fig. 483 illustrates the components of the stereo visual data stored in Stereo Visual Data Storage Area H23c (Fig. 482). Fig. 483 describes the components of Stereo Visual Data H23c1 (Fig. 482) as an example. As described in Fig. 483, Stereo Visual Data H23c1 includes Left LCD Visual Data H23c1L, Right LCD Visual Data H23c1R, and Stereo Visual Data Output Timing Data H23c1T. Left LCD Visual Data H23c1L is a visual data which is designed to be output from LCD 201L (Fig. 467b). Right LCD Visual Data H23c1R is a visual data which is designed to be output from LCD 201R (Fig. 467b). Stereo Visual Data Output Timing Data H23c1T is a timing data which is utilized to synchronize the output of both Left LCD Visual Data H23c1L and Right LCD Visual Data H23c1R from LCD 201R and LCD 201L respectively.

[2569] Fig. 484 illustrates the sequence of the software program stored in Stereo Visual Software Storage Area H23b (Fig. 481). Referring to Fig. 484, the software program stored in Stereo Visual Software Storage Area H23b extracts one of the stereo visual data stored in Stereo Visual Data Stor-

age Area H23c (Fig. 482) and creates Transferred Stereo Visual Data TSVD for purposes of transferring the extracted stereo visual data to Communication Device 200 (S1).

[2570] Fig. 485 illustrates the components of Transferred Stereo Visual Data TSVD created by the software program stored in Stereo Visual Software Storage Area H23b (Fig. 484). As described in Fig. 485, Transferred Stereo Visual Data TSVD is composed of Header TSVD1, Com Device ID TSVD2, Host ID TSVD3, Transferred Stereo Visual Data TSVD4, and Footer TSVD5. Com Device ID TSVD2 indicates the identification of Communication Device 200, Host ID TSVD3 indicates the identification of Host H (Fig. 429), and Transferred Stereo Visual Data TSVD4 is the stereo visual data extracted in the manner described in Fig. 484. Header TSVD1 and Footer TSVD5 indicate the beginning and the end of Transferred Stereo Visual Data TSVD.

[2571] Fig. 486 illustrates the storage area included in RAM 206 (Fig. 1) of Communication Device 200 (Fig. 429). As described in Fig. 486, RAM 206 includes Stereo Visual Information Storage Area 20623a. Stereo Visual Information Storage Area 20623a stores the software programs and data necessary to implement the present function as de-

scribed in details hereinafter.

[2572] Fig. 487 illustrates the storage areas included in Stereo Visual Information Storage Area 20623a (Fig. 486). As described in Fig. 487, Stereo Visual Information Storage Area 20623a includes Stereo Visual Software Storage Area 20623b and Stereo Visual Data Storage Area 20623c. Stereo Visual Software Storage Area 20623b stores the software programs necessary to implement the present function, such as the ones described in Figs. 490 and 491 hereinafter. Stereo Visual Data Storage Area 20623c stores the data necessary to implement the present function, such as the ones described in Fig. 488 hereinafter.

[2573] Fig. 488 illustrates the stereo visual data stored in Stereo Visual Data Storage Area 20623c (Fig. 487). A plurality of stereo visual data are stored in Stereo Visual Data Storage Area 20623c. In the example described in Fig. 488, three stereo visual data, i.e., Stereo Visual Data 20623c1, Stereo Visual Data 20623c2, and Stereo Visual Data 20623c3 are stored therein.

[2574] Fig. 489 illustrates the components of the stereo visual data stored in Stereo Visual Data Storage Area 20623c (Fig. 488). Fig. 489 describes the components of Stereo Visual Data 20623c1 (Fig. 488) as an example. As de-

scribed in Fig. 489, Stereo Visual Data 20623c1 includes Left LCD Visual Data 20623c1L, Right LCD Visual Data 20623c1R, and Stereo Visual Data Output Timing Data 20623c1T. Left LCD Visual Data 20623c1L is a visual data which is designed to be output from LCD 201L (Fig. 467b). Right LCD Visual Data 20623c1R is a visual data which is designed to be output from LCD 201R (Fig. 467b). Stereo Visual Data Output Timing Data 20623c1T is a timing data which is utilized to synchronize the output of both Left LCD Visual Data 20623c1L and Right LCD Visual Data 20623c1R from LCD 201R and LCD 201L respectively.

[2575] With regard to the process of selecting and downloading the stereo visual data to Communication Device 200, the concept illustrated in Figs. 401 through 407 applies hereto. The downloaded stereo visual data are stored in specific area(s) of Stereo Visual Data Storage Area 20623c (Fig. 488).

[2576] Fig. 490 illustrates the sequence of selecting and preparing to output the stereo visual data from LCDs 201L and 201R (Fig. 467b) in a stereo fashion. As described in Fig. 490, a list of stereo visual data is displayed on LCD 201 (Fig. 1) (S1). The user of Communication Device 200 se-

lects one stereo visual data by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2). Assuming Stereo Visual Data 20623c1 is selected (Fig. 488) in S2, CPU 211 (Fig. 1) retrieves Left LCD Visual Data 20623c1L (S3), Right LCD Visual Data 20623c1R (S4), and Stereo Visual Data Output Timing Data 20623c1T from Stereo Visual Data Storage Area 20623c (Fig. 488) (S5).

[2577] Fig. 491 illustrates the sequence of outputting the stereo visual data from LCDs 201L and 201R (Fig. 467b) in a stereo fashion. As described in Fig. 491, the user of Communication Device 200 inputs a specific signal to output the stereo visual data by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). Assuming Visual Data 20623c1 (Fig. 488) is selected in S2 of Fig. 490, CPU 211 outputs Left LCD Visual Data 20623c1L (Fig. 489) and Right LCD Visual Data 20623c1R (Fig. 489) from LCDs 201L and 201R respectively in a stereo fashion in accordance with Stereo Visual Data Output Timing Data 20623c1T (Fig. 489) (S2).

[2578] *<<Stereo Visual Data Output Function -- Summary>>*

[2579] The foregoing inventions may be summarized as the following.

[2580] (1) A communication device comprising a wireless com-

munication unit, a microphone, a left LCD, a right LCD, a display, and an input device, wherein said communication device functions in a voice communication mode and a stereo visual data output mode, said microphone is utilized for inputting visual data of a first person which is transferred via said wireless communication unit, and said left LCD, and said right LCD are utilized for outputting visual data of a second person when said communication device is in said voice communication mode, a list of stereo visual data is displayed on said display, a selected stereo visual data is selected from said list via said input device, said selected stereo visual data is output from said left LCD and said right LCD in a stereo fashion when said communication device is in said stereo visual data output mode.

[2581] (2) A host comprising a stereo visual data storage area in which a plurality of stereo visual data are stored, said host is capable to send and receive data, wherein said host retrieves from said stereo visual data storage area and sends a selected stereo visual data requested by a request data sent by said wireless communication device to said wireless communication device for purposes of said communication device to receive said selected stereo visual

data via a wireless communication unit and output said selected stereo visual data from a left LCD and a right LCD of said wireless communication device when said wireless communication device is in a stereo visual data output mode.

[2582] (3) A stereo visual data output system comprising a host and a communication device, said host comprises a stereo visual data storage area in which a plurality of stereo visual data are stored, said host is capable to send and receive data with a wireless communication device, said host retrieves from said stereo visual data storage area and sends a selected stereo visual data requested by a request data sent by said wireless communication device to said wireless communication device, said communication device comprises a wireless communication unit, a microphone, a left LCD, a right LCD, a display, and an input device, said communication device functions in a voice communication mode and a stereo visual data output mode, said microphone is utilized for inputting visual data of a first person which is transferred via said wireless communication unit, and said left LCD, and said right LCD are utilized for outputting visual data of a second person when said communication device is in said voice commu-

nication mode, said selected stereo visual data is output from said left LCD and said right LCD in a stereo fashion when said communication device is in said stereo visual data output mode.

[2583] *<<Multiple Signal Processing Function>>*

[2584] Figs. 492 through 529 illustrate the multiple signal processing function which enables Communication Device 200 to implement wireless communication in various types of wireless signals, for example, cdma2000, W-CDMA, and TDS-CDMA (For the avoidance of doubt, the term 'TDS-CDMA' is equivalent to 'TDD' and 'TD-CDMA' in this specification).

[2585] Fig. 492 illustrates the elements of Signal Processor 208 (Fig. 1). As described in Fig. 492, Signal Processor 208 includes CDMA2000 Signal Processor 20824a, W-CDMA Signal Processor 20824b, TDS-CDMA Signal Processor 20824c, and Signal Type Detector 20824d. CDMA2000 Signal Processor 20824a is a hardware circuit to convert the cdma2000 signals into CPU readable data and to convert the CPU readable data into cdma 2000 signals. W-CDMA Signal Processor 20824b is a hardware circuit to convert the W-CDMA signals into CPU readable data and to convert the CPU readable data into W-CDMA signals.

TDS-CDMA Signal Processor 20824c is a hardware circuit to convert the TDS-CDMA signals into CPU readable data and to convert the CPU readable data into TDS-CDMA signals. Signal Type Detector 20824d is a hardware circuit to detect the type of the signal received via Antenna 218 of which the elements are described in Fig. 493 hereinafter. For the avoidance of doubt, process or signal process means converting a certain type of signal into a CPU readable data and/or converting a CPU readable data into a certain type of signal in this specification.

[2586] Fig. 493 illustrates the elements of Signal Type Detector 20824d (Fig. 492). As described in Fig. 493, Signal Type Detector 20824d includes Signal Type Detecting Software Storage Area 20824d1 and Signal Processing CPU 20824d2. Signal Type Detecting Software Storage Area 20824d1 stores the software programs to detect the type of the signal to be utilized for the signal process of which the sequence is described hereinafter. Signal Processing CPU 20824d2 is a central processing unit to execute the software program stored in Signal Type Detecting Software Storage Area 20824d1.

[2587] Fig. 493a illustrates the software program stored in Signal Type Detecting Software Storage Area 20824d1 (Fig. 493)

executed by Signal Processing CPU 20824d2 (Fig. 493) to send an inquiry signal. Here, the inquiry signal is a signal sent via Antenna 218 (Fig. 1) to identify the type of signal to be utilized for the signal process. Referring to Fig. 493a, Signal Processing CPU 20824d2 periodically sends inquiry signals by utilizing cdma2000 signal, W-CDMA signal, and TDS-CDMA signal via Antenna 218 (Fig. 1).

[2588] Fig. 494 illustrates the software program stored in Signal Type Detecting Software Storage Area 20824d1 (Fig. 493) executed by Signal Processing CPU 20824d2 (Fig. 493) to determine the type of signal to be utilized for the signal process. As described in Fig. 494, Signal Processing CPU 20824d2 periodically checks the incoming signals received via Antenna 218 (Fig. 1) (S1). If the incoming signal is a response signal of a certain signal level (S2), Signal Processing CPU 20824d2 identifies the type of the signal, and sets a path to the relevant signal processor and forwards the received signal thereto (S4). For example, if the identified signal is a cdma2000 signal, Signal Processing CPU 20824d2 sets a path to CDMA2000 Signal Processor 20824a (Fig. 492) and forwards the received signal thereto. If the identified signal is a W-CDMA signal, Signal Processing CPU 20824d2 sets a path to W-CDMA Signal

Processor 20824b (Fig. 492) and forwards the received signal thereto. If the identified signal is a TDS-CDMA signal, Signal Processing CPU 20824d2 sets a path to TDS-CDMA Signal Processor 20824c (Fig. 492) and forwards the received signal thereto. The signal processor to which the path is set performs the signal process hereafter.

[2589] Fig. 495 illustrates the second embodiment of Signal Processor 208. As described in Fig. 495, Signal Processor 208 includes CDMA2000 Signal Processor 20824a, W-CDMA Signal Processor 20824b, and TDS-CDMA Signal Processor 20824c, all of which are directly connected to Antenna 218 (Fig. 1). CDMA2000 Signal Processor 20824a is a hardware circuit to process cdma2000 signals of which the details are described in Figs. 496 through 497. W-CDMA Signal Processor 20824b is a hardware circuit to process W-CDMA signals of which the details are described in Figs. 498 through 499. TDS-CDMA Signal Processor 20824c is a hardware circuit to process TDS-CDMA signals of which the details are described in Figs. 500 through 501.

[2590] Fig. 496 illustrates CDMA2000 Signal Processor 20824a (Fig. 495) of the second embodiment. As described in Fig. 496, CDMA2000 Signal Processor 20824a includes

CDMA2000 Signal Processing Software Storage Area 20824a1 of which the software program stored therein is described in Figs. 496a and 497 hereinafter.

[2591] Fig. 496a illustrates the software program stored in CDMA2000 Signal Processing 24a1 (Fig. 496) to send an inquiry signal. Here, the inquiry signal is a cdma2000 signal sent via Antenna 218 (Fig. 1) to identify the type of signal to be utilized for the signal process. The identification of the type of signal is performed by sending an inquiry signal which requests for a response signal, and identifying the type of the response signal which is sent to Communication Device 200 in response to the inquiry signal. Referring to Fig. 496a, CDMA2000 Signal Processor 20824a periodically sends an inquiry signal by utilizing cdma2000 signal via Antenna 218 (Fig. 1).

[2592] Fig. 497 illustrates the software program stored in CDMA2000 Signal Processing Software Storage Area 20824a1 (Fig. 496). Referring to Fig. 497, CDMA2000 Signal Processor 20824a (Fig. 496) periodically checks the incoming signal received via Antenna 218 (Fig. 1) (S1). If the incoming signal is a response signal utilizing cdma2000 signal (S2), CDMA2000 Signal Processor 20824a initiates the signal process by utilizing cdma2000

signal (S3).

[2593] Fig. 498 illustrates W-CDMA Signal Processor 20824b (Fig. 495) of the second embodiment. As described in Fig. 498, W-CDMA Signal Processor 20824b includes W-CDMA Signal Processing Software Storage Area 20824b1 of which the software program stored therein is described in Figs. 498a and 499 hereinafter.

[2594] Fig. 498a illustrates the software program stored in W-CDMA Signal Processing Software Storage Area 20824b1 (Fig. 498) to send an inquiry signal. Here, the inquiry signal is a W-CDMA signal sent via Antenna 218 (Fig. 1) to identify the type of signal to be utilized for the signal process. The identification of the type of signal is performed by sending an inquiry signal which requests for a response signal, and identifying the type of the response signal which is sent to Communication Device 200 in response to the inquiry signal. Referring to Fig. 496a, W-CDMA Signal Processor 20824b (Fig. 498) periodically sends an inquiry signal by utilizing W-CDMA signal via Antenna 218 (Fig. 1).

[2595] Fig. 499 illustrates the software program stored in W-CDMA Signal Processing Software Storage Area 20824b1 (Fig. 498). Referring to Fig. 499, W-CDMA Signal Proces-

sor 20824b (Fig. 498) periodically checks the incoming signal received via Antenna 218 (Fig. 1) (S1). If the incoming signal is a response signal utilizing W-CDMA signal (S2), W-CDMA Signal Processor 20824b initiates the signal process by utilizing W-CDMA signal (S3).

[2596] Fig. 500 illustrates TDS-CDMA Signal Processor 20824c (Fig. 495) of the second embodiment. As described in Fig. 500, TDS-CDMA Signal Processor 20824c includes TDS-CDMA Signal Processing Software Storage Area 20824c1 of which the software program stored therein is described in Figs. 500a and 501 hereinafter.

[2597] Fig. 500a illustrates the software program stored in TDS-CDMA Signal Processing Software Storage Area 20824c1 (Fig. 500) to send an inquiry signal. Here, the inquiry signal is a TDS-CDMA signal sent via Antenna 218 (Fig. 1) to identify the type of signal to be utilized for the signal process. The identification of the type of signal is performed by sending an inquiry signal which requests for a response signal, and identifying the type of the response signal which is sent to Communication Device 200 in response to the inquiry signal. Referring to Fig. 500a, TDS-CDMA Signal Processor 20824c (Fig. 500) periodically sends an inquiry signal by utilizing TDS-CDMA signal via

Antenna 218 (Fig. 1).

[2598] Fig. 501 illustrates the software program stored in TDS-CDMA Signal Processing Software Storage Area 20824c1 (Fig. 501). Referring to Fig. 501, TDS-CDMA Signal Processor 20824c (Fig. 500) periodically checks the incoming signal received via Antenna 218 (Fig. 1) (S1). If the incoming signal is a response signal utilizing TDS-CDMA signal (S2), TDS-CDMA Signal Processor 20824c initiates the signal process by utilizing TDS-CDMA signal (S3).

[2599] Figs. 502 through 503 illustrate the third embodiment to implement the present function by utilizing a minimum amount of hardware circuits.

[2600] Fig. 502 illustrates the elements of Signal Processor 208 (Fig. 1). As described in Fig. 502, Signal Processor 208 includes Signal Type Detector 20824d, CDMA2000 Signal Processing Software Archive 20824e, W-CDMA Signal Processing Software Archive 20824f, TDS-CDMA Signal Processing Software Archive 20824g, and Signal Processing Work Area 20824h. Signal Type Detector 20824d is a hardware circuit to detect the type of the signal received via Antenna 218 of which the elements are same as the ones described in Fig. 493. CDMA2000 Signal Processing Software Archive 20824e stores the software programs in

a compressed format which processes cdma2000 signals. W-CDMA Signal Processing Software Archive 20824f stores the software programs in a compressed format which processes W-CDMA signals. TDS-CDMA Signal Processing Software Archive 20824g stores the software programs in a compressed format which process TDS-CDMA signals. Signal Processing Work Area 20824h is a work area for one or more of the software programs to be executed of which the sequence is described in Fig. 503.

[2601] Fig. 502a illustrates the software program stored in Signal Type Detecting Software Storage Area 20824d1 (Fig. 493) executed by Signal Processing CPU 20824d2 (Fig. 493) to send an inquiry signal. Here, the inquiry signal is a signal sent via Antenna 218 (Fig. 1) to identify the type of signal to be utilized for the signal process. Referring to Fig. 502a, Signal Processing CPU 20824d2 periodically sends inquiry signals by cdma2000 signal, W-CDMA signal, and TDS-CDMA signal via Antenna 218 (Fig. 1).

[2602] Fig. 503 illustrates the sequence of Signal Processor 208 (Fig. 1) in the third embodiment. Referring to Fig. 503, Signal Processing CPU 20824d2 (Fig. 493) periodically checks the incoming signals received via Antenna 218 (Fig. 1) (S1). If an incoming signal is received, Signal Pro-

cessing CPU 20824d2 determines whether the incoming signal is a response signal (S2), and identifies the type of the signal (S3). Signal Processing CPU 20824d2 unpacks the corresponding software program stored in Signal Processor 208 thereafter (S4). Signal Processing CPU 20824d2 executes the unpacked software program to initiate the signal process therewith (S5). For example, If Signal Processing CPU 20824d2 identifies that the response signal is a cdma2000 signal, it unpacks the compressed software program stored in CDMA2000 Signal Processing Software Archive 20824e (Fig. 502) and initiates the signal process by utilizing Signal Processing Work Area 20824h (Fig. 502). If Signal Processing CPU 20824d2 identifies that the response signal is a W-CDMA signal, it unpacks the compressed software program stored in W-CDMA Signal Processing Software Archive 20824f and initiates the signal process by utilizing Signal Processing Work Area 20824h. If Signal Processing CPU 20824d2 identifies that the received signal is a TDS-CDMA signal, it unpacks the compressed software program stored in TDS-CDMA Signal Processing Software Archive 20824g and initiates the signal process by utilizing Signal Processing Work Area 20824h.

[2603] Figs. 504 through 515 illustrate the fourth embodiment to implement the present function by utilizing a hardware circuit for processing cdma2000 signal and utilizing software programs for processing the other types of signals.

[2604] Fig. 504 illustrates the elements of Signal Processor 208 (Fig. 1). As described in Fig. 504, Signal Processor 208 includes Signal Type Detector 20824d, CDMA2000 Signal Processor 20824a, W-CDMA Signal Processing Software Archive 20824f, TDS-CDMA Signal Processing Software Archive 20824g, and Signal Processing Work Area 20824h. Signal Type Detector 20824d is a hardware circuit to detect the type of the signal received via Antenna 218 of which the elements are same as the ones described in Fig. 493. CDMA2000 Signal Processor 20824a is a hardware circuit to process cdma2000 signals of which the details are described in Fig. 506. W-CDMA Signal Processing Software Archive 20824f stores a software program in a compressed format which processes W-CDMA signals. TDS-CDMA Signal Processing Software Archive 20824g stores a software program in a compressed format which processes TDS-CDMA signals. Signal Processing Work Area 20824h is a work area for one or more of the software programs to be executed of which the se-

quence is described in Fig. 507.

[2605] Fig. 504a illustrates the software program stored in Signal Type Detecting Software Storage Area 20824d1 (Fig. 493) executed by Signal Processing CPU 20824d2 (Fig. 493) to send an inquiry signal. Here, the inquiry signal is a signal sent via Antenna 218 (Fig. 1) to identify the type of signal to be utilized for the signal process. Referring to Fig. 504a, Signal Processing CPU 20824d2 periodically sends inquiry signals by cdma2000 signal, W-CDMA signal, and TDS-CDMA signal via Antenna 218 (Fig. 1).

[2606] Fig. 505 illustrates the software program stored in Signal Type Detecting Software Storage Area 20824d1 (Fig. 493) executed by Signal Processing CPU 20824d2 (Fig. 493). As described in Fig. 505, Signal Processing CPU 20824d2 periodically checks the incoming signal received via Antenna 218 (Fig. 1) (S1). If an incoming signal is received, Signal Processing CPU 20824d2 determines whether the incoming signal is a response signal (S2), and identifies the type of the signal (S3). Signal Processing CPU 20824d2 thereafter sets a path to the relevant signal processor (S4). For example, if the identified signal is a cdma2000 signal, Signal Processing CPU 20824d2 sets a path to CDMA2000 Signal Processor 20824a (Fig. 504) of which the remaining

process is described in Fig. 506. If the identified signal is a W-CDMA signal or a TDS-CDMA signal, Signal Processing CPU 20824d2 sets a path to Signal Processing Work Area 20824h (Fig. 504) of which the remaining process is described in Fig. 507.

[2607] Fig. 506 illustrates the sequence of CDMA2000 Signal Processor 20824a (Fig. 504). Referring to Fig. 506, CDMA2000 Signal Processor 20824a processes cdma2000 signal received from Signal Type Detector 20824d (Fig. 504), and converts the cdma2000 signals into CPU readable data. CDMA2000 Signal Processor 20824a also converts CPU readable data into cdma signals.

[2608] Fig. 507 illustrates the sequence of Signal Processing CPU 20824d2 (Fig. 493). Referring to Fig. 507, Signal Processing CPU 20824d2 unpacks the corresponding software program stored in Signal Processor 208 (S1), and executes the unpacked software program (S2). The unpacked software program performs the signal process thereafter (S2). For example, if Signal Processing CPU 20824d2 identifies that the received signal is a W-CDMA signal in S3 of Fig. 505, it unpacks the compressed software program stored in W-CDMA Signal Processing Software Archive 20824f (Fig. 504) and initiates the signal process by utilizing Sig-

nal Processing Work Area 20824h (Fig. 504). If Signal Processing CPU 20824d2 identifies that the received signal is a TDS-CDMA signal in S3 of Fig. 505, it unpacks the compressed software program stored in TDS-CDMA Signal Processing Software Archive 20824g (Fig. 504) and initiates the signal process by utilizing Signal Processing Work Area 20824h.

[2609] Figs. 508 through 511 illustrate another variation of the fourth embodiment to implement the present function by utilizing a hardware circuit for processing W-CDMA signal and utilizing software programs for processing the other types of signals.

[2610] Fig. 508 illustrates the elements of Signal Processor 208 (Fig. 1). As described in Fig. 508, Signal Processor 208 includes Signal Type Detector 20824d, W-CDMA Signal Processor 20824b, CDMA2000 Signal Processing Software Archive 20824e, TDS-CDMA Signal Processing Software Archive 20824g, and Signal Processing Work Area 20824h. Signal Type Detector 20824d is a hardware circuit to detect the type of the signal received via Antenna 218 of which the elements are same as the ones described in Fig. 493. W-CDMA Signal Processor 20824b is a hardware circuit to process W-CDMA signals of which the de-

tails are described in Fig. 510. CDMA2000 Signal Processing Software Archive 20824e stores a software program in a compressed format which processes cdma2000 signals. TDS-CDMA Signal Processing Software Archive 20824g stores a software program in a compressed format which processes TDS-CDMA signals. Signal Processing Work Area 20824h is a work area for one or more of the software programs to be executed of which the sequence is described in Fig. 511.

[2611] Fig. 508a illustrates the software program stored in Signal Type Detecting Software Storage Area 20824d1 (Fig. 493) executed by Signal Processing CPU 20824d2 (Fig. 493) to send an inquiry signal. Here, the inquiry signal is a signal sent via Antenna 218 (Fig. 1) to identify the type of signal to be utilized for the signal process. Referring to Fig. 508a, Signal Processing CPU 20824d2 periodically sends inquiry signals by cdma2000 signal, W-CDMA signal, and TDS-CDMA signal via Antenna 218 (Fig. 1).

[2612] Fig. 509 illustrates the software program stored in Signal Type Detecting Software Storage Area 20824d1 (Fig. 493) executed by Signal Processing CPU 20824d2 (Fig. 493). As described in Fig. 509, Signal Processing CPU 20824d2 periodically checks the incoming signal received via Antenna

218 (Fig. 1) (S1). If an incoming signal is received, Signal Processing CPU 20824d2 determines whether the incoming signal is a response signal (S2), and identifies the type of the signal (S3). Signal Processing CPU 20824d2 thereafter sets a path to the relevant signal processor (S4). For example, if the identified signal is a W-CDMA signal, Signal Processing CPU 20824d2 sets a path to W-CDMA Signal Processor 20824b (Fig. 508) of which the remaining process is described in Fig. 510. If the identified signal is a cdma2000 signal or a TDS-CDMA signal, Signal Processing CPU 20824d2 sets a path to Signal Processing Work Area 20824h (Fig. 508) of which the remaining process is described in Fig. 511.

[2613] Fig. 510 illustrates the sequence of W-CDMA Signal Processor 20824b (Fig. 508). Referring to Fig. 510, W-CDMA Signal Processor 20824b processes W-CDMA signal received from Signal Type Detector 20824d (Fig. 508), and converts the W-CDMA signal into CPU readable data. W-CDMA Signal Processor 20824b also converts CPU readable data into cdma signals.

[2614] Fig. 511 illustrates the sequence of Signal Processing CPU 20824d2 (Fig. 493). Referring to Fig. 511, Signal Processing CPU 20824d2 unpacks the corresponding software

program stored in Signal Processor 208 (S1), and executes the unpacked software program (S2). The unpacked software program performs the signal process thereafter (S2). For example, if Signal Processing CPU 20824d2 identifies that the received signal is a cdma2000 signal in S3 of Fig. 509, it unpacks the compressed software program stored in CDMA2000 Signal Processing Software Archive 20824e (Fig. 508) and initiates the signal process by utilizing Signal Processing Work Area 20824h (Fig. 508). If Signal Processing CPU 20824d2 identifies that the received signal is a TDS-CDMA signal in S3 of Fig. 509, it unpacks the compressed software program stored in TDS-CDMA Signal Processing Software Archive 20824g (Fig. 508) and initiates the signal process by utilizing Signal Processing Work Area 20824h.

[2615] Figs. 512 through 515 illustrate another variation of the fourth embodiment to implement the present function by utilizing a hardware circuit for processing TDS-CDMA signal and utilizing software programs for processing the other types of signals.

[2616] Fig. 512 illustrates the elements of Signal Processor 208 (Fig. 1). As described in Fig. 512, Signal Processor 208 includes Signal Type Detector 20824d, TDS-CDMA Signal

Processor 20824c, CDMA2000 Signal Processing Software Archive 20824e, W-CDMA Signal Processing Software Archive 20824f, and Signal Processing Work Area 20824h. Signal Type Detector 20824d is a hardware circuit to detect the type of the signal received via Antenna 218 of which the elements are same as the ones described in Fig. 493. TDS-CDMA Signal Processor 20824c is a hardware circuit to process TDS-CDMA signals of which the details are described in Fig. 514. CDMA2000 Signal Processing Software Archive 20824e stores a software program in a compressed format which processes cdma2000 signals. W-CDMA Signal Processing Software Archive 20824f stores a software program in a compressed format which processes W-CDMA signals. Signal Processing Work Area 20824h is a work area for one or more of the software programs to be executed of which the sequence is described in Fig. 515.

[2617] Fig. 512a illustrates the software program stored in Signal Type Detecting Software Storage Area 20824d1 (Fig. 493) executed by Signal Processing CPU 20824d2 (Fig. 493) to send an inquiry signal. Here, the inquiry signal is a signal sent via Antenna 218 (Fig. 1) to identify the type of signal to be utilized for the signal process. Referring to Fig.

512a, Signal Processing CPU 20824d2 periodically sends inquiry signals by cdma2000 signal, W-CDMA signal, and TDS-CDMA signal via Antenna 218 (Fig. 1).

[2618] Fig. 513 illustrates the software program stored in Signal Type Detecting Software Storage Area 20824d1 (Fig. 493) executed by Signal Processing CPU 20824d2 (Fig. 493). As described in Fig. 513, Signal Processing CPU 20824d2 periodically checks the incoming signal received via Antenna 218 (Fig. 1) (S1). If an incoming signal is received, Signal Processing CPU 20824d2 determines whether the incoming signal is a response signal (S2), and identifies the type of the signal (S3). Signal Processing CPU 20824d2 thereafter sets a path to the relevant signal processor (S4). For example, if the identified signal is a TDS-CDMA signal, Signal Processing CPU 20824d2 sets a path to TDS-CDMA Signal Processor 20824c (Fig. 512) of which the remaining process is described in Fig. 514. If the identified signal is a cdma2000 signal or a W-CDMA signal, Signal Processing CPU 20824d2 sets a path to Signal Processing Work Area 20824h (Fig. 512) of which the remaining process is described in Fig. 515.

[2619] Fig. 514 illustrates the sequence of TDS-CDMA Signal Processor 20824c (Fig. 512). Referring to Fig. 514, TDS-

CDMA Signal Processor 20824c processes TDS-CDMA signal received from Signal Type Detector 20824d (Fig. 512), and converts the W-CDMA signal into CPU readable data. TDS-CDMA Signal Processor 20824c also converts CPU readable data into TDS-CDMA signals.

[2620] Fig. 515 illustrates the sequence of Signal Processing CPU 20824d2 (Fig. 493). Referring to Fig. 515, Signal Processing CPU 20824d2 unpacks the corresponding software program stored in Signal Processor 208 (S1), and executes the unpacked software program (S2). The unpacked software program performs the signal process thereafter (S2). For example, if Signal Processing CPU 20824d2 identifies that the received signal is a cdma2000 signal in S3 of Fig. 513, it unpacks the compressed software program stored in CDMA2000 Signal Processing Software Archive 20824e (Fig. 512) and initiates the signal process by utilizing Signal Processing Work Area 20824h (Fig. 512). If Signal Processing CPU 20824d2 identifies that the received signal is a W-CDMA signal in S3 of Fig. 513, it unpacks the compressed software program stored in W-CDMA Signal Processing Software Archive 20824f (Fig. 512) and initiates the signal process by utilizing Signal Processing Work Area 20824h.

[2621] Figs. 516 through 521 illustrate the method to display on LCD 201 (Fig. 1) the type of signal currently utlized by Signal Processor 208 (Fig. 1).

[2622] Fig. 516 illustrates the item(s) displayed on LCD 201 (Fig. 1). As described in Fig. 516, the type of signal currently utilized by Signal Processor 208 (Fig. 1) is displayed on LCD 201. In the example explained in Fig. 516, Message MS5 is displayed if cdma2000 signal is utilized for signal processing by Signal Processor 208, Message MS6 is displayed if W-CDMA signal is utilized for signal processing by Signal Processor 208, and Message MS7 is displayed if TDS-CDMA signal is utilized for signal processing by Signal Processor 208.

[2623] Fig. 517 illustrates the information stored in RAM 206 (Fig. 1). As described in Fig. 517, RAM 206 includes Multiple Signal Processing Information Storage Area 20624a in which the storage areas included are described in Fig. 518 hereinafter.

[2624] Fig. 518 illustrates the storage areas included in Multiple Signal Processing Information Storage Area 20624a. As described in Fig. 518, Multiple Signal Processing Information Storage Area 20624a includes Multiple Signal Processing Software Storage Area 20624b and Multiple Signal

Processing Data Storage Area 20624c. Multiple Signal Processing Software Storage Area 20624b stores the software programs necessary to implement the present function, such as the one described in Fig. 521, and Multiple Signal Processing Data Storage Area 20624c stores the data necessary to implement the present function, such as the one described in Fig. 519.

[2625] Fig. 519 illustrates the data stored in Multiple Signal Processing Data Storage Area 20624c (Fig. 518). As described in Fig. 519, Multiple Signal Processing Data Storage Area 20624c includes Message Data Storage Area 20624c1 in which the data stored are explained in Fig. 520 hereinafter.

[2626] Fig. 520 illustrates the data stored in Message Data Storage Area 20624c1 (Fig. 519). As described in Fig. 520, Message Data Storage Area 20624c1 stores Message MS5, Message MS6, and Message MS7. Here, Message MS5 represents the text data indicating the word cdma2000, Message MS6 represents the text data indicating the word W-CDMA, and Message MS7 represents the text data indicating the word TDS-CDMA, all of which are displayed on LCD 201 (Fig. 1) as described in Fig. 516.

[2627] Fig. 521 illustrates the software program store in Multiple

Signal Processing Software Storage Area 20624b (Fig. 518). Referring to Fig. 521, CPU 211 (Fig. 1) periodically checks the incoming signal received via Antenna 218 (Fig. 1) (S1). If an incoming signal is received, CPU 211 determines the type of the signal (S3). CPU 211 thereafter retrieves from Message Data Storage Area 20624c1 and displays the relvant text data on LCD 201 (Fig. 1) (S4). For example, CPU 211 displays Message MS5 if cdma2000 signal is detected. In the like manner, CPU 211 displays Message MS6 if W-CDMA signal is detected and Message MS7 if TDS-CDMA signal is detected. As another embodiment, the detection of the type of the signal utilized for signal processing may be delegated to Signal Processing CPU 20824d2 (Fig. 493).

[2628] For the avoidance of doubt, all software programs described hereinbefore to implement the present function may be executed solely by CPU 211 (Fig. 1) or by Signal Processing CPU 20824d2 (Fig. 493), or by both CPU 211 and Signal Processing CPU 20824d2.

[2629] *<<Multiple Signal Processing Function -- Simultaneous Multiple Signal Processing Function>>*

[2630] Fig. 522 through 529 illustrate the simultaneous multiple signal processing function which enables Communication

Device 200 to process with multiple types of signals simultaneously. By utilizing the present function, Communication Device 200 is capable to signal process by utilizing cdma2000 signal, W-CDMA signal, and TDS-CDMA signal simultaneously.

[2631] Fig. 522 illustrates the information stored in Multiple Signal Processing Software Storage Area 20624b (Fig. 518). As described in Fig. 522, Multiple Signal Processing Software Storage Area 20624b includes Simultaneous Multiple Signal Processing Software Strorage Area 20624b1. Simultaneous Multiple Signal Processing Software Strorage Area 20624b1stores the software programs to process cdma2000 signal, W-CDMA signal, and TDS-CDMA signal which are described in Figs. 523 through 525 hereinafter.

[2632] Fig. 523 illustrates the software program stored in Simultaneous Multiple Signal Processing Software Strorage Area 20624b1 (Fig. 522) to process cdma2000 signal. Referring to Fig. 523, Signal Processing CPU 20824d2 (Fig. 493) periodically checks the incoming signal (S1). If the incoming signal is cdma2000 signal of which the signal level exceeds value x (S2), Signal Processing CPU 20824d2 initiates the signal process by utilizing cdma2000 signal (S3).

[2633] Fig. 524 illustrates the software program stored in Simul-

taneous Multiple Signal Processing Software Strorage Area 20624b1 (Fig. 522) to process W-CDMA signal. Referring to Fig. 524, Signal Processing CPU 20824d2 (Fig. 493) periodically checks the incoming signal (S1). If the incoming signal is W-CDMA signal of which the signal level exceeds value x (S2), Signal Processing CPU 20824d2 initiates the signal process by utilizing W-CDMA signal (S3).

[2634] Fig. 525 illustrates the software program stored in Simultaneous Multiple Signal Processing Software Strorage Area 20624b1 (Fig. 522) to process TDS-CDMA signal. Referring to Fig. 525, Signal Processing CPU 20824d2 (Fig. 493) periodically checks the incoming signal (S1). If the incoming signal is TDS -CDMA signal of which the signal level exceeds value x (S2), Signal Processing CPU 20824d2 initiates the signal process by utilizing TDS -CDMA signal (S3).

[2635] Figs. 526 through 529 illustrate the soft handover process of Communication Device 200 handovering from one type of signal to another type of signal. The current process is implemented when Communication Device 200 is moving from, for example, an area utilizing cdma2000 signal to another area utilizing W-CDMA signal.

[2636] Fig. 526 illustrates the storage area included in Multiple

Signal Processing Software Storage Area 20624b (Fig. 522). As described in Fig. 526, Multiple Signal Processing Software Storage Area 20624b includes Soft Handover Processing Software Storage Area 20624b2 in which the software programs stored are explained in Figs. 527 through 529.

[2637] The soft handover process is primarily divided in three parts wherein the first part is described in Fig. 527, the second part is described in Fig. 528, and the third part is described in Fig. 529.

[2638] Fig. 527 illustrates the software program stored in Soft Handover Processing Software Storage Area 20624b2 (Fig. 527) which implements the first part of the soft handover process. Referring to Fig. 527, Signal Processing CPU 20824d2 (Fig. 493) periodically checks the status of the incoming signal (S1). If the level of the signal currently utilized (e.g., cdma2000 signal) exceeds the value x, the soft handover process is not initiated and Signal Processing CPU 20824d2 continues to utilize the type of signal (e.g., cdma2000 signal) for signal processing (S2). If the level of the signal currently utilized (e.g., cdma2000 signal) does not exceed the value x, on the other hand (S2), the soft handover process is initiated of which the details

are described in Fig. 528 (S3).

[2639] Fig. 528 illustrates the software program stored in Soft Handover Processing Software Storage Area 20624b2 (Fig. 526) which implements the second part of the soft handover process. Referring to Fig. 528, Signal Processing CPU 20824d2 (Fig. 493) searches for other types of signals to maintain seamless connection (S1). If another type of signal (e.g., W-CDMA signal) of which the signal level exceeds the value y is found (S2), Signal Processing CPU 20824d2 initiates new connection utilizing such type (e.g., W-CDMA signal) to maintain seamless communication (S3).

[2640] Fig. 529 illustrates the software program stored in Soft Handover Processing Software Storage Area 20624b2 (Fig. 527) which implements the third part of the soft handover process. Referring to Fig. 529, Signal Processing CPU 20824d2 (Fig. 493) periodically checks the current status of the signal level of the type of signal (e.g., cdma2000) which has been utilizing (S1). If the signal level of such type (e.g., cdma2000) still exceeds the value z, Signal Processing CPU 20824d2 maintains connection utilizing such type of signal (e.g., cdma2000) (S2). Here, Signal Processing CPU 20824d2 is utilizing two types of signals

for the signal process (e.g., cdma2000 and W-CDMA) at this moment. On the other hand, if the signal level of such type (e.g., cdma2000) no longer exceeds the value z, Signal Processing CPU 20824d2 terminates to maintain connection utilizing such type of signal (e.g., cdma2000) (S3). Signal Processing CPU 20824d2 utilizes only the signal found in S2 of Fig. 528 for the signal process thereafter.

[2641] For the avoidance of doubt, all software programs described hereinbefore to implement the present function may be executed solely by CPU 211 (Fig. 1) or by Signal Processing CPU 20824d2 (Fig. 493), or by both CPU 211 and Signal Processing CPU 20824d2.

[2642] As another embodiment, the multiple signal processing function may be utilized for processing other sets of combination of the signals, such as the 2G signal, the 3G signal, and the 4G signal. In order to implement this embodiment, the term 'cdma2000' is substituted by '2G', the term 'W-CDMA' is substituted by '3G', and the term 'TDS-CDMA' is substituted by '4G' in Figs. 492 through 529 for purposes of implementing the present embodiment. Here, the 2G signal may be of any type of signal categorized as 2G, including, but not limited to cdmaOne, GSM, and D-AMPS; the 3G signal may be of any type of signal catego-

rized as 3G, including, but not limited to cdma2000, W-CDMA, and TDS-CDMA; and the 4G signal may be of any type of signal categorized as 4G.

[2643] As another embodiment, the multiple signal processing function may be utilized for processing the first type of 4G signal, the second type of 4G signal, and the third type of 4G signal. In order to implement this embodiment, the term 'cdma2000' is substituted by 'the first type of 4G signal', the term 'W-CDMA' is substituted by 'the second type of 4G signal', and the term 'TDS-CDMA' is substituted by 'the third type of 4G signal' in Figs. 492 through 529 for purposes of implementing the present embodiment. Here, the first type of 4G signal, the second type of 4G signal, and the third type of 4G signal may be of any type of signal categorized as 4G.

[2644] As another embodiment, the multiple signal processing function may be utilized for processing the 2G signal, the first type of 3G signal, and the second type of 3G signal. In order to implement this embodiment, the term 'cdma2000' is substituted by 'the 2G signal', the term 'W-CDMA' is substituted by 'the first type of 3G signal', and the term 'TDS-CDMA' is substituted by 'the second type of 3G signal' in Figs. 492 through 529 for purposes of im-

plementing the present embodiment. Here, the 2G signal may be of any type of signal categorized as 2G, including, but not limited to cdmaOne, GSM, and D-AMPS; and the first type of 3G signal and the second type of 3G signal may be of any type of signal categorized as 3G, including, but not limited to cdma2000, W-CDMA, and TDS-CDMA.

[2645] As another embodiment, the multiple signal processing function may be utilized for processing the first type of 2G signal, the second type of 2G signal, and the 3G signal. In order to implement this embodiment, the term 'cdma2000' is substituted by 'the first type of 2G signal', the term 'W-CDMA' is substituted by 'the second type of 2G signal', and the term 'TDS-CDMA' is substituted by 'the 3G signal' in Figs. 492 through 529 for purposes of implementing the present embodiment. Here, the first type of 2G signal and the second type of 2G signal may be of any type of signal categorized as 2G, including, but not limited to cdmaOne, GSM, and D-AMPS; and the 3G signal may be of any type of signal categorized as 3G, including, but not limited to cdma2000, W-CDMA, and TDS-CDMA.

[2646] In sum, the multiple signal processing function described in Figs. 492 through 529 maybe utilized for processing any combination of any type of signal.

[2647] *<<Multiple Signal Processing Function -- Summary>>*

[2648] (1) A communication device comprising an antenna, a signal processor, said signal processor processes a series of wireless signals received from said antenna, said signal processor processes a first signal and a second signal wherein said first signal and said second signal are of different types of signal.

[2649] (2) A communication device of the summary (1) wherein said first signal is a cdma2000 signal.

[2650] (3) A communication device of the summary (1) wherein said first signal is a W-CDMA signal.

[2651] (4) A communication device of the summary (1) wherein said first signal is a TDS-CDMA signal.

[2652] (5) A communication device of the summary (1) wherein said communication device further comprises a display wherein said display outputs the type of signal which said signal processor is currently processing.

[2653] (6) A communication device of the summary (1) wherein said antenna and said signal processor are capable to process email data.

[2654] (7) A communication device of the summary (1) wherein said antenna and said signal processor are capable to process voice communication data.

[2655] (8) A communication device of the summary (1) wherein said antenna and said signal processor are capable to process email data and voice communication data.

[2656] *<<Positioning System -- Pin-pointing Function>>*

[2657] Figs. 530 through 553 illustrate the pin-pointing function of positioning system which enables Communication Device 200 to display the accurate location of another wireless communication device in an artificial structure, such as a non-movable structure (e.g., building and house) and a movable structure (e.g., train, airplane, space shuttle, and space station). Figs. 20a through 26 apply to implement the pin-pointing function. An example of Device A displaying the location of Device B is utilized hereinafter wherein both Device A and Device B are Communication Devices 200.

[2658] Fig. 530 illustrates a building in which Device B is located. Referring to Fig. 530, Building 25BLD is composed of Basement 25BSM1 (the basement), Floor 25FLR1 (the first floor), Floor 25FLR2 (the second floor), and Floor 25FLR3 (the third floor).

[2659] Fig. 531 illustrates the relays installed in each room of Building 25BLD (Fig. 530). Referring to Fig. 531, each Room 25RM of Building 25BLD is installed of a plurality of

relays which are utilized for detecting the location of Communication Device 200 by the method so-called 'GPS' as described in Figs. 20a through 26. In the present example, four relays, i.e., R51 through R54 are installed in Room 25RM in the manner described in Fig. 531.

[2660] Fig. 532 illustrates the relays installed in each corridor of Building 25BLD (Fig. 530). Referring to Fig. 532, each Corridor 25CRD of Building 25BLD is installed of a plurality of relays which are utilized for detecting the location of Communication Device 200 by the method so-called 'GPS' as described in Figs. 20a through 26. In the present example, nine relays, i.e., R55 through R63 are installed in Corridor 25CRD in the manner described in Fig. 532.

[2661] Referring to Fig. 533, the user of Device A selects the display type by utilizing Input Device 210 (Fig. 1) or via voice recognition system. Here, the display type available in the present embodiment are the display type #1 (which displays the area map with the indication of the location of Device B therein as described in Fig. 534), the display type #2 (which displays the building and each floor with the indication of the location of Device B therein as described in Fig. 535), and the display type #3 (which displays the room and the indication of the location of Device B therein

as described in Fig. 536). In one embodiment, the display type #1 is selected when a specific key of Input Device 210 is pressed once (S1), the display type #2 is selected when the specific key of Input Device 210 is pressed again (S2), and the display type #3 is selected when the specific key of Input Device 210 is pressed for one more time (S3).

[2662] Fig. 534 illustrates the method to display an area map describing the area where Device B is located. As described in Fig. 534, Area Map Display Area 20125AMD in which an area map is shown is displayed on LCD 201 (Fig. 1) when a specific key of Input Device 210 is pressed as described in S1 of Fig. 533.

[2663] Fig. 535 illustrates the method to display the building and the floor where Device B is located. As described in Fig. 535, Building 25BLD and each floor thereof (e.g., Basement 25BSM1, Floor 25FLR1, Floor 25FLR2, and Floor 25FLR3 in Fig. 530) are displayed on LCD 201 (Fig. 1) when a specific key of Input Device 210 is pressed in the manner described in S2 of Fig. 533. LCD 201 indicates that Device B is located on Floor 25FLR2 (the second floor) of Building 25BLD in the example described in Fig. 535.

[2664] Fig. 536 illustrates the method to display the room where Device B is located. As described in Fig. 536, Room 25RM

is displayed on LCD 201 (Fig. 1) when a specific key of Input Device 210 (Fig. 1) is pressed in the manner described in S3 of Fig. 533. LCD 201 indicates that Device B is located in Room 25RM and the location therein as described in Fig. 536.

[2665] Figs. 537 through 542 illustrates another embodiment of pin-pointing the location of Device B in a train.

[2666] Referring to Fig. 537, Train 25TRN is composed of four cars, i.e., Car 25CR1 (the first car), Car 25CR2 (the second care), Car 25CR3 (the third car), and Car 25CR4 (the fourth car).

[2667] Fig. 538 illustrates the relays installed in each car of Train 25TRN (Fig. 537). Taking Car 25CR1 for example, Car 25CR1 is installed of a plurality of relays which are utilized for detecting the existence and the precise location of Communication Device 200 therein by utilizing the method so-called 'GPS' as described in Figs. 20a through 26. In the present example, six relays, i.e., R71 through R76 are installed in Car 25CR1 in the manner described in Fig. 538.

[2668] Referring to Fig. 539, the user of Device A selects the display type by utilizing Input Device 210 (Fig. 1) or via voice recognition system in the manner described in Fig. 539.

Here, the display type available in the present embodiment are the display type #1 (which displays the area map with the indication of the location of Device B therein as described in Fig. 540), the display type #2 (which displays the main structure of Train 25TRN (Fig. 537) with the indication of the location of Device B therein as described in Fig. 541), and the display type #3 (which displays the car and the indication of the location of Device B therein as described in Fig. 542). In one embodiment, the display type #1 is selected when a specific key of Input Device 210 is pressed once (S1), the display type #2 is selected when the specific key of Input Device 210 is pressed again (S2), and the display type #3 is selected when the specific key of Input Device 210 is pressed for one more time (S3).

[2669] Fig. 540 illustrates the method to display an area map describing the area where Device B is located. As described in Fig. 540, Area Map Display Area 20125AMD in which an area map is shown is displayed on LCD 201 (Fig. 1) when a specific key of Input Device 210 is pressed as described in S1 of Fig. 539.

[2670] Fig. 541 illustrates the method to display the train and the car where Device B is located. As described in Fig. 541, Train 25TRN and each care thereof (e.g., Car 25CR1, Car

25CR2, Car 25CR3, and Car 25CR4) are displayed on LCD 201 (Fig. 1) when a specific key of Input Device 210 is pressed in the manner described in S2 of Fig. 539. LCD 201 indicates that Device B is located in Car 25CR1 (the first car) of Train 25TRN in the example described in Fig. 541.

[2671] Fig. 542 illustrates the method to display the car where Device B is located. Assuming that Device B is located in Car 25CR1. As described in Fig. 542, Car 25CR1 is displayed on LCD 201 (Fig. 1) when a specific key of Input Device 210 (Fig. 1) is pressed in the manner described in S3 of Fig. 539. LCD 201 indicates that Device B is located in Car 25CR1 and the location therein as described in Fig. 542.

[2672] Fig. 543 illustrates the information stored in Host Information Storage Area H00a (Fig. 429). As described in Fig. 543, Host Information Storage Area H00a includes GPS Information Storage Area H25a of which the details are described in Fig. 544.

[2673] Fig. 544 illustrates the storage areas included in GPS Information Storage Area H25a (Fig. 543). As described in Fig. 544, GPS Information Storage Area H25a includes GPS Software Storage Area H25b and GPS Data Storage Area

H25c. GPS Software Storage Area H25b stores the software programs necessary to implement the present function, such as the one described in Fig. 546. GPS Data Storage Area H25c stores the data necessary to implement the present function, such as the one described in Fig. 545.

[2674] Fig. 545 illustrates the storage areas included in GPS Data Storage Area H25c (Fig. 544). As described in Fig. 545, GPS Data Storage Area H25c includes Communication Device Location Data Storage Area H25c1, Map Data Storage Area H25c2, 3D Map Data Storage Area H25c3, Character Data Storage Area H25c4, and Relay Location Data Storage Area H25c5. Communication Device Location Data Storage Area H25c1 stores the location data of Communication Devices 200. Map Data Storage Area H25c2 stores a plurality of map data which are designed to be sent to Communication Devices 200. 3D Map Data Storage Area H25c3 stores a plurlaity of three-dimensional version of map data corresponding to the map data stored in Map Data Storage Area H25c2. Character Data Storage Area H25c4 stores various types of character data designed to be displayed on LCD 201 (Fig. 1) of Communication Device 200. Relay Location Data Storage Area H25c5 stores the location data of the relays and relating data thereto as de-

scribed in Fig. 545a hereinafter.

[2675] Fig. 545a illustrates the data stored in Relay Location Data Storage Area H25c5 (Fig. 545). Referring to Fig. 545a, Relay Location Data Storage Area H25c5 stores a plurality of the Relay ID, the Location Data and the Reference Data. The column Relay ID stores identifications assigned to each relay. The column Location Data stores location data in x, y, z format of each relay utilized for calculating the location of Communication Device 200 by the GPS system of which the details are explained in Figs. 20a through 26. The column Reference Data stores identification of each building, floor number, and the room identification in which the relays are installed. Assume that Building 25BLD (Fig. 530) is assigned as 'Building #5', Floor 25FLR3 (Fig. 530) is assigned as 'Floor #3', Room 25RM (Fig. 531) is assigned as 'Room #1', and Corridor 25CRD (Fig. 532) is assigned as 'Corridor #1'. Taking the data described in Fig. 545a for example, the Location Data of Relay ID R51 is x51,y51,z51 and its Reference Data is Building #5,Floor #3,Room #1 which means that relay R51 is installed in Room #1 located on Floor #3 of Building #5. In the same manner, the Location Data of Relay ID R52 is x52,y52,z52 and its Reference Data is Building #5,Floor #3,Room

#1which means that relay R52 is installed in Room #1 located on Floor #3 of Building #5; the Location Data of Relay ID R53 is x53,y53,z53 and its Reference Data is Building #5,Floor #3,Room #1which means that relay R53 is installed in Room #1 located on Floor #3 of Building #5; the Location Data of Relay ID R54 is x54,y54,z54 and its Reference Data is Building #5,Floor #3,Room #1which means that relay R54 is installed in Room #1 located on Floor #3 of Building #5; the Location Data of Relay ID R55 is x55,y55,z55 and its Reference Data is Building #5,Floor #3,Corridor #1which means that relay R55 is installed in Corridor #1 located on Floor #3 of Building #5; the Location Data of Relay ID R56 is x56,y56,z56 and its Reference Data is Building #5,Floor #3,Corridor #1which means that relay R56 is installed in Corridor #1 located on Floor #3 of Building #5; the Location Data of Relay ID R57 is x57,y57,z57 and its Reference Data is Building #5,Floor #3,Corridor #1which means that relay R57 is installed in Corridor #1 located on Floor #3 of Building #5; the Location Data of Relay ID R58 is x58,y58,z58 and its Reference Data is Building #5,Floor #3,Corridor #1which means that relay R58 is installed in Corridor #1 located on Floor #3 of Building #5; the Location Data of Relay ID R59 is

x59,y59,z59 and its Reference Data is Building #5,Floor #3,Corridor #1which means that relay R59 is installed in Corridor #1 located on Floor #3 of Building #5; the Location Data of Relay ID R60 is x60,y60,z60 and its Reference Data is Building #5,Floor #3,Corridor #1which means that relay R60 is installed in Corridor #1 located on Floor #3 of Building #5; the Location Data of Relay ID R61 is x61,y61,z61 and its Reference Data is Building #5,Floor #3,Corridor #1which means that relay R61 is installed in Corridor #1 located on Floor #3 of Building #5; the Location Data of Relay ID R62 is x62,y62,z62 and its Reference Data is Building #5,Floor #3,Corridor #1which means that relay R62 is installed in Corridor #1 located on Floor #3 of Building #5; and the Location Data of Relay ID R63 is x63,y63,z63 and its Reference Data is Building #5,Floor #3,Corridor #1which means that relay R63 is installed in Corridor #1 located on Floor #3 of Building #5.

[2676] Fig. 546 illustrates the sequence of the software program stored in GPS Software Storage Area H25b (Fig. 544). Assume that Device B is located in Room #1 (Room 25RM (Fig. 531)). Referring to Fig. 546, Host H (Fig. 429) identifies the location of Device B by utilizing the GPS system based on the data received from the relevant relays (S1).

In the present example, Host H identifies the location of Device B by calculating the data received from relays R51 through R54. Next, Host H retrieves data from Relay Location Data Storage Area H25c5 (Fig. 545a) the Relay ID, the Location Data and the Reference Data of the corresponding relays (S2). In the present example, the Relay ID, the Location Data and the Reference Data of relays R51 through R54 are retrieved. Host H then retrieves the map data regarding the surrounding area from Map Data Storage Area H25c2 (Fig. 545) and also the corresponding 3D map data from 3D Map Data Storage Area H25c3 (Fig. 545) (S3). In the present example, Host H retrieves the map data and the 3D map data of the area surrounding Building 25BLD (Fig. 530). Next, Host H retrieves the character data stored in Character Data Storage Area H25c4 (Fig. 545) which are designed to be displayed on LCD 201 (Fig. 1) of Device A (S4). The examples of the character data retrieved by Host H are the image data of Building 25BLD (Fig. 530) and Room 25RM (Fig. 531) as described in Figs. 535 and 536. The data retrieved in steps S1 through S4 are sent to Device A (S5).

[2677] Fig. 547 illustrates the information stored in RAM 206 (Fig. 1) of Device A. As described in Fig. 547, RAM 206 in-

cludes GPS Information Storage Area 20625a of which the details are described in Fig. 548.

[2678] Fig. 548 illustrates the storage areas included in GPS Information Storage Area 20625a (Fig. 547). As described in Fig. 548, GPS Information Storage Area 20625a includes GPS Software Storage Area 20625b and GPS Data Storage Area 20625c. GPS Software Storage Area 20625b stores the software programs necessary to implement the present function, such as the one described in Fig. 550. GPS Data Storage Area 20625c stores the data necessary to implement the present function, such as the one described in Fig. 549.

[2679] Fig. 549 illustrates the storage areas included in GPS Data Storage Area 20625c (Fig. 548). As described in Fig. 549, GPS Data Storage Area 20625c includes Communication Device Location Data Storage Area 20625c1, Map Data Storage Area 20625c2, 3D Map Data Storage Area 20625c3, Character Data Storage Area 20625c4, and Relay Location Data Storage Area 20625c5. Communication Device Location Data Storage Area 20625c1 stores location data of Device B which is retrieved in S1 of Fig. 546. Map Data Storage Area 20625c2 stores a map data which is retrieved in S2 of Fig. 546. 3D Map Data Storage Area

20625c3 stores a three-dimensional version of map data corresponding to the map data stored in Map Data Storage Area 20625c2, which is also retrieved in S2 of Fig. 546. Character Data Storage Area 20625c4 stores character data designed to be displayed on LCD 201 (Fig. 1) of Device A which is retrieved in S4 of Fig. 546. Relay Location Data Storage Area 20625c5 stores the location data of the relays and relating data thereto which are retrieved in S2 of Fig. 546.

[2680] Fig. 549a illustrates the data stored in Relay Location Data Storage Area 20625c5 (Fig. 549) which are retrieved in S2 of Fig. 546. Referring to Fig. 549a, Relay Location Data Storage Area 20625c5 (Fig. 549) stores a plurality of the Relay ID, the Location Data and the Reference Data. The column Relay ID stores identifications assigned to each relay. The column Location Data stores location data of each relay in x, y, z format utilized for calculating the location of Communication Device 200 by the GPS system of which the details are explained in Figs. 20a through 26. The column Reference Data stores identification of the building, floor number, and the room identification in which the relays are installed. Assume that Building 25BLD (Fig. 530) is assigned as 'Building #5', Floor 25FLR3 (Fig.

530) is assigned as 'Floor #3', Room 25RM (Fig. 531) is assigned as 'Room #1', and Corridor 25CRD (Fig. 532) is assigned as 'Corridor #1'. Taking the data described in Fig. 549a for example, the Location Data of Relay ID R51 is x51,y51,z51 and its Reference Data is Building #5,Floor #3,Room #1 which means that relay R51 is installed in Room #1 located on Floor #3 of Building #5. In the same manner, the Location Data of Relay ID R52 is x52,y52,z52 and its Reference Data is Building #5,Floor #3,Room #1which means that relay R52 is installed in Room #1 located on Floor #3 of Building #5; the Location Data of Relay ID R53 is x53,y53,z53 and its Reference Data is Building #5,Floor #3,Room #1which means that relay R53 is installed in Room #1 located on Floor #3 of Building #5; and the Location Data of Relay ID R54 is x54,y54,z54 and its Reference Data is Building #5,Floor #3,Room #1which means that relay R54 is installed in Room #1 located on Floor #3 of Building #5.

[2681] Fig. 550 illustrates the sequence of the software program stored in GPS Software Storage Area 20625b (Fig. 548) to select the display type. Referring to Fig. 550, the user of Device A selects the display type by utilizing Input Device 210 (Fig. 1) or via voice recognition system in the manner

described in Fig. 533. Here, the display type available in the present embodiment are the display type #1 (which displays the area map with the indication of the location of Device B therein as described in Fig. 534), the display type #2 (which displays the building and each floor with the indication of the location of Device B therein as described in Fig. 535), and the display type #3 (which displays the room and the indication of the location of Device B therein as described in Fig. 536) (S1).

[2682] Fig. 551 illustrates the sequence of the software program stored in GPS Software Storage Area 20625b (Fig. 548) when display type #1 is selected in S1 of Fig. 550. Referring to Fig. 551, CPU 211 (Fig. 1) retreives map data from Map Data Storage Area 20625c2 (Fig. 549) (S1). CPU 211 then retrieves the location data of Device B from Communication Device Location Data Storage Area 20625c1 (Fig. 549) (S2). CPU 211 identifies the location of Device B in the retrieved map data (S3). The retrieved map data and the location of Device B therein are displayed on LCD 201 (Fig. 1) as described in Fig. 534 (S4). As another embodiment, a 3D map data may also be displayed. Namely, CPU 211 (Fig. 1) retreives map data from 3D map data from 3D Map Data Storage Area 20625c3 (Fig. 549) (S1). CPU 211

then retrieves the location data of Device B from Communication Device Location Data Storage Area 20625c1 (Fig. 549) (S2). CPU 211 identifies the location of Device B in the retrieved 3D map data (S3). The retrieved 3D map data and the location of Device B therein are displayed on LCD 201 (Fig. 1) as described in Fig. 534 (S4).

[2683] Fig. 552 illustrates the sequence of the software program stored in GPS Software Storage Area 20625b (Fig. 548) when display type #2 is selected in S1 of Fig. 550. Referring to Fig. 552, CPU 211 (Fig. 1) retreives the character data of Building 25BLD (Fig. 530) from Character Data Storage Area 20625c4 (Fig. 549) (S1). CPU 211 then retrieves the location data of Device B from Communication Device Location Data Storage Area 20625c1 (Fig. 549) (S2). CPU 211 identifies the location of Device B in Building 25BLD (S3). Building 25BLD and the location of Device B therein are displayed on LCD 201 (Fig. 1) as described in Fig. 535 (S4).

[2684] Fig. 553 illustrates the sequence of the software program stored in GPS Software Storage Area 20625b (Fig. 548) when display type #3 is selected in S1 of Fig. 550. Referring to Fig. 553, CPU 211 (Fig. 1) retreives the character data of Room 25RM (Fig. 531) from Character Data Stor-

age Area 20625c4 (Fig. 549) (S1). CPU 211 then retrieves the location data of Device B from Communication Device Location Data Storage Area 20625c1 (Fig. 549) (S2). CPU 211 identifies the location of Device B in Room 25RM (S3). Room 25RM and the location of Device B therein are displayed on LCD 201 (Fig. 1) as described in Fig. 536 (S4).

[2685] For the avoidance of doubt, the concept described in Figs. 543 through 553 is not only applicable to display the location of Device B in a building, but also applicable to display the location thereof in a houst, train, airplane, space shuttle, and/or space station.

[2686] *<<Positioning System -- Pin-pointing Function Summary>>*

[2687] (1) A positioning system comprising a plurality of relays, a host, a communication device, a target device, said plurality of relays are installed in an artificial structure, said host identifies the location of said target device located in said artifical structure, said receiver device comprises a display, and said display outputs a character data of said artificial structure with a mark indicating the location of said target device located therein.

[2688] (2) A communication device comprising a display, a memory, a CPU, wherein said memory stores a character data of an artificial structure, said memory stores a location

data, and said display outputs said character data of said artificial structure with a mark corresponding to said location data.

[2689] (3) A positioning system comprising a plurality of relays, a host, said host comprises a memory stored a character data, said plurality of relays are installed in an artificial structure, said host calculates an location data based on data received from said plurality of relays, said host retrieves said character data from said memory, and said host outputs said location data and said character data.

[2690] *<<Artificial Satellite Host>>*

[2691] Fig. 554 through 567 illustrate Host H, an artificial satellite, which provides the Internet service to Communication Devices 200. In other words, Host H, by being itself as a gateway to the Internet, enables Communication Devices 200 to access the Internet via Host H.

[2692] Fig. 554 illustrates the block diagram of Host H. Referring to Fig. 554, CPU H211 controls and administers the overall function and operation of Host H. CPU H211 utilizes RAM H206 to temporarily store data and/or to perform calculation to perform its function. RAM H206 is also utilized to store a plurality of data and programs necessary to perform the present invention. Video Generator H202

generates analog and/or digital video signals which are displayed on Monitor H201. Sound Generator H205 generates analog and/or digital audio signals that are transferred to Speaker H204. ROM H207 stores the data and programs which are necessary to perform the present invention. Antenna H212 sends and receives communication data, location data, and various types of wireless signals. Signal Processor H208 converts a stream of data produced by CPU H211 into a specific format (for example, data compression) in order to be sent by Antenna H212 in a wireless fashion, and also converts a stream of wireless data received by Antenna H212 into a specific format which is readable by CPU H211. Input signals are input by Input Device H210, such as keyboard, ON/OFF switches, joystick, and the signals are transferred to CPU H211 via Interface H209 and Data Bus H203. Direction Controller H213 controls the direction of Host H under the control and administration of CPU H211. Altitude Controller H214 controls the altitude of Host H under the control and administration of CPU H211. Speed Controller H215 controls the speed of Host H under the control and administration of CPU H211. Angle Controller H216 controls the angle of Host H under the control and administration of CPU H211.

GPS Navigation System H217 periodically calculates and identifies the present location of Host H in the actual three-dimensional space by way of utilizing the method so-called GPS or global positioning system as described hereinbefore. Solar Panel H230 converts sunlight to electricity. Battery H231 accumulates electricity produced by Solar Panel H230, and provides electricity to each element of Host H.

[2693] Fig. 555 illustrates the storage areas included in RAM H206 (Fig. 554). As described in Fig. 555, RAM H206 includes Account Information Storage Area H20626a and Artificial Satellite Operating Information Storage Area H20626v. Account Information Storage Area H20626a stores the information necessary for Host H (Fig. 554) to provide the Internet service of which the details are described in Figs. 556 through 559. Artificial Satellite Operating Information Storage Area H20626v stores the information necessary for Host H to orbit around the earth as an artificial satellite of which the details are described in Figs. 560 through 567.

[2694] Fig. 556 illustrates the storage areas included in Account Information Storage Area H20626a (Fig. 555). As described in Fig. 556, Account Information Storage Area

H20626a includes Account Software Storage Area H20626b and Account Data Storage Area H20626c. Account Software Storage Area H20626b stores the software programs necessary for Host H (Fig. 554) to provide the Internet service to the users of Communication Devicess 200 of which the details are described in Figs. 558 and 559. Account Data Storage Area H20626c data necessary for Host H to provide the Internet service to the user of Communication Devices 200 of which the details are described in Fig. 557.

[2695] Fig. 557 illustrates the data stored in Account Data Storage Area H20626c (Fig. 556). As described in Fig. 557, Account Data Storage Area H20626c comprises three columns, i.e., User ID, Password, and Hardware ID. User ID is an identification of the user of Communication Device 200, Password is a password set by the user of Communication Device 200, and Hardware ID is an identification of the hardware of Communication Device 200. In the example described in Fig. 557, Account Data Storage Area H20626c stores the account data of eight users, i.e., the users of which the User ID are USID#1, USID#2, USID#3, USID#4, USID#5, USID#6, USID#7, and USID#8 more precisely, USID#1 of which the Password is PW#1 and of

which the Hardware ID is HID#1; USID#2 of which the Password is PW#2 and of which the Hardware ID is HID#2; USID#3 of which the Password is PW#3 and of which the Hardware ID is HID#3; USID#4 of which the Password is PW#4 and of which the Hardware ID is HID#4; USID#5 of which the Password is PW#5 and of which the Hardware ID is HID#5; USID#6 of which the Password is PW#6 and of which the Hardware ID is HID#6; USID#7 of which the Password is PW#7 and of which the Hardware ID is HID#7; and USID#8 of which the Password is PW#8 and of which the Hardware ID is HID#8.

[2696] Fig. 558 illustrates the software program stored in Account Software Storage Area H20626b (Fig. 556). Referring to Fig. 558, Host H (Fig. 554) recieves a transferred data from Communication Device 200 via Antenna H218 (Fig. 554) (S1). If the transferred data is a request to access the Internet (S2), CPU H211 retrieves the user ID, password, and hardware ID therefrom (S3). CPU H211 compares the user ID, password, and hardware ID with the ones stored in Account Data Storage Area H20626c (Fig. 557) (S4), and if the user ID with the same password and the same hardware ID is found therein (S5), CPU H211 initiates the connection process as described in Fig. 559

(S6).

[2697] Fig. 559 illustrates the software program stored in Account Software Storage Area H20626b (Fig. 556) to perform the Internet connection. Referring to Fig. 559, CPU H211 (Fig. 554) forwards the data to the Internet received from Communication Device 200 (S1), and forwards the data to Communication Device 200 received from the Internet (S2). The sequence of S1 and S2 is repeated for a plurality of times.

[2698] Fig. 560 illustrates the storage areas included in Artificial Satellite Operating Information Storage Area H20626v (Fig. 555). As described in Fig. 560, Artificial Satellite Operating Information Storage Area H20626v includes Artificial Satellite Operating Software Storage Area H20626w and Artificial Satellite Operating Data Storage Area H20626x. Artificial Satellite Operating Software Storage Area H20626w stores the software programs necessary to for Host H (Fig. 554) to orbit around the earth as an artificial satellite of which the details are described in Figs. 563 through 567. Artificial Satellite Operating Data Storage Area H20626x stores the data necessary for Host H to orbit around the earth as an artificial satellite of which the details are described in Fig. 561.

[2699] Fig. 561 illustrates the storage area included in Artificial Satellite Operating Data Storage Area H20626x (Fig. 560). As described in Fig. 561, Artificial Satellite Operating Data Storage Area H20626x includes Direction Controlling Data Storage Area H20626x1, Altitude Controlling Data Storage Area H20626x2, Speed Controlling Data Storage Area H20626x3, Angle Controlling Data Storage Area H20626x4, and GPS Navigation Data Storage Area H20626x5. Direction Controlling Data Storage Area H20626x1 stores the data necessary to determine the direction of Host H (Fig. 554) while orbitting around the earth. Altitude Controlling Data Storage Area H20626x2 stores the data necessary to determine the altitude of Host H while orbitting around the earth. Speed Controlling Data Storage Area H20626x3 stores the data necessary to determine the speed of Host H while orbitting around the earth. Angle Controlling Data Storage Area H20626x4 stores the data necessary to determine the angle of Host H while orbitting around the earth. GPS Navigation Data Storage Area H20626x5 stores the data produced by GPS Navigation System H217 (Fig. 554) of which the details are described in Fig. 562.

[2700] Fig. 562 illustrates the data stored in GPS Navigation Data

Storage Area H20626x5 (Fig. 561). As described in Fig. 562, GPS Navigation Data Storage Area H20626x5 stores GPS Navigation Data H26GND which is composed of Current Direction Data H26GND1, Current Altitude Data H26GND2, Current Speed Data H26GND3, and Current Angle Data H26GND4. Current Direction Data H26GND1 represents the current direction to which Host H (Fig. 554) travels, Current Altitude Data H26GND2 represents the current altitude of Host H, Current Speed Data H26GND3 represents the current speed of Host H, and Current Angle Data H26GND4 represents the current angle of Host H.

[2701] Fig. 563 illustrates the software program stored in Artificial Satellite Operating Software Storage Area H20626w (Fig. 560). Referring to Fig. 563, CPU H211 (Fig. 554) periodically retrieves GPS Navigation Data H26GND (Fig. 562) from GPS Navigation System H217 (Fig. 564) (S1), and stores GPS Navigation Data H26GND to GPS Navigation Data Storage Area H20626x5 (Fig. 561) (S2). The sequence of S1 and S2 is performed periodically until a signal indicating otherwise is input to Host H (Fig. 554).

[2702] Fig. 564 illustrates the software program stored in Artificial Satellite Operating Software Storage Area H20626w (Fig. 560). Referring to Fig. 564, CPU H211 (Fig. 554) re-

trieves Current Direction Data H26GND1 (Fig. 562) from GPS Navigation Data Storage Area H20626x5 (Fig. 561) (S1) and also retrieves Direction Controlling Data from Direction Controlling Data Storage Area H20626x1 (Fig. 561) (S2). CPU H211 then compares the two data (S3), and corrects and adjusts the current direction of Host H (Fig. 554) (S4).

[2703] Fig. 565 illustrates the software program stored in Artificial Satellite Operating Software Storage Area H20626w (Fig. 560). Referring to Fig. 565, CPU H211 (Fig. 554) retrieves Current Altitude Data H26GND2 (Fig. 562) from GPS Navigation Data Storage Area H20626x5 (Fig. 561) (S1) and also retrieves Altitude Controlling Data from Altitude Controlling Data Storage Area H20626x2 (Fig. 561) (S2). CPU H211 then compares the two data (S3), and corrects and adjusts the current altitude of Host H (Fig. 554) (S4).

[2704] Fig. 566 illustrates the software program stored in Artificial Satellite Operating Software Storage Area H20626w (Fig. 560). Referring to Fig. 566, CPU H211 (Fig. 554) retrieves Current Speed Data H26GND3 (Fig. 562) from GPS Navigation Data Storage Area H20626x5 (Fig. 561) (S1) and also retrieves Speed Controlling Data from Speed

Controlling Data Storage Area H20626x3 (Fig. 561) (S2). CPU H211 then compares the two data (S3), and corrects and adjusts the current speed of Host H (Fig. 554) (S4).

[2705] Fig. 567 illustrates the software program stored in Artificial Satellite Operating Software Storage Area H20626w (Fig. 560). Referring to Fig. 567, CPU H211 (Fig. 554) retrieves Current Angle Data H26GND4 (Fig. 562) from GPS Navigation Data Storage Area H20626x5 (Fig. 561) (S1) and also retrieves Angle Controlling Data from Angle Controlling Data Storage Area H20626x4 (Fig. 561) (S2). CPU H211 then compares the two data (S3), and corrects and adjusts the current angle of Host H (Fig. 554) (S4).

[2706] As another embodiment, Host H may carry two CPUs, i.e., the first CPU and the second CPU, and also may carry two RAMs, i.e., the first RAM and the second RAM, wherein the first CPU and the first RAM is assigned to provide the Internet service, and the second CPU and the second RAM is assigned toorbit around the earth.

[2707] *<<Artificial Satellite Host -- Summary>>*

[2708] An artificial satellite orbitting around the earth wherein said artificial satellite comprises a memory including two storage areas, i.e., an account information storage area and an artificial satellite operating information storage

area, said account information storage area stores a plurality of account data, said artificial satellite operating information storage area stores artificial satellite operating data which is necessary to orbit around the earth, said artificial satellite enables a terminal to access the Internet via said artificial satellite while said artificial satellite orbits around the earth by utilizing said artificial satellite operating data stored in said artificial satellite operating information storage area.

[2709] *<<CCD Bar Code Reader Function -- Pattern Matching By Host H>>*

[2710] Figs. 568 through 579 illustrate the CCD bar code reader function which enbles Communication Device 200 to read bar codes and retrieve alphanumeric data therefrom. Two embodiments are illustrated hereinafter: (1) the CCD bar code reader function implemented by the combination of Host H (Fig. 429) and Communication Device 200, and (2) the CCD bar code reader function implemented solely by Communication Device 200. The first embodiment is described in Figs. 568 through 574, and the second embodiment is described in Figs. 575 through 579.

[2711] Fig. 568 illustrates the storage area included in Host Information Storage Area H00a (Fig. 429). As described in

Fig. 568, Host Information Storage Area H00a includes CCD Bar Code Reader Information Storage Area H27a of which the data stored therein are described in Fig. 569.

[2712] Fig. 569 illustrates the storage areas included in CCD Bar Code Reader Information Storage Area H27a (Fig. 568). As described in Fig. 569, CCD Bar Code Reader Information Storage Area H27a includes CCD Bar Code Reader Data Storage Area H27b and CCD Bar Code Reader Software Storage Area H27c. CCD Bar Code Reader Data Storage Area H27b stores the data necessary to implement the present function such as the ones described in Figs. 570 and 571. CCD Bar Code Reader Software Storage Area H27c stores the software programs necessary to implement the present function such as the ones described in Figs. 572 through 574.

[2713] Fig. 570 illustrates the storages areas included in CCD Bar Code Reader Data Storage Area H27b (Fig. 569). As described in Fig. 570, CCD Bar Code Reader Data Storage Area H27b includes Bar Code Pattern Data Storage Area H27b1 and Bar Code Pattern Data Working Area H27b2. Bar Code Pattern Data Storage Area H27b1 stores a plurality of bar code pattern data of which the details are described in Fig. 571. Bar Code Pattern Data Working Area

H27b2 is a work area utilized by Host H (Fig. 429) to implement the present function.

[2714] Fig. 571 illustrates the data stored in Bar Code Pattern Data Storage Area H27b1 (Fig. 570). As described in Fig. 571, the data stored in Bar Code Pattern Data Storage Area H27b1 comprises three columns, i.e., Pattern ID PTI, Pattern Image PTIm, and Corresponding Data CPD. Pattern ID PTI is an identification of Pattern Image PTIm, Pattern Image PTIm is an image data of bar code which is compared with the image data input via CCD Unit 214 (Fig. 1), and Corresponding Data CPD is an alphanumeric data corresponding to Pattern Image PTIm. In the example described in Fig. 571, The pattern ID PTI#1 is an identification of pattern image data PTIm#1 of which the corresponding alphanumeric data is CPD#1; the pattern ID PTI#2 is an identification of pattern image data PTIm#2 of which the corresponding alphanumeric data is CPD#2; the pattern ID PTI#3 is an identification of pattern image data PTIm#3 of which the corresponding alphanumeric data is CPD#3; the pattern ID PTI#4 is an identification of pattern image data PTIm#4 of which the corresponding alphanumeric data is CPD#4; the pattern ID PTI#5 is an identification of pattern image data PTIm#5 of which the corre-

sponding alphanumeric data is CPD#5; the pattern ID PTI#6 is an identification of pattern image data PTIm#6 of which the corresponding alphanumeric data is CPD#6; the pattern ID PTI#7 is an identification of pattern image data PTIm#7 of which the corresponding alphanumeric data is CPD#7; the pattern ID PTI#8 is an identification of pattern image data PTIm#8 of which the corresponding alphanumeric data is CPD#8; the pattern ID PTI#9 is an identification of pattern image data PTIm#9 of which the corresponding alphanumeric data is CPD#9; and the pattern ID PTI#10 is an identification of pattern image data PTIm#10 of which the corresponding alphanumeric data is CPD#10.

[2715] Fig. 572 illustrates the sequence to implement the present function. Referring to Fig. 572, CPU 211 (Fig. 1) of Communication Device 200 scans a bar code image data by utilizing CCD Unit 214 (Fig. 1) (S1). CPU 211 then sends the bar code image data via Antenna 218 (Fig. 1) (S2). By the execution of CCD Bar Code Reader Software Storage Area H27c (Fig. 569), the bar code image is received by Host H (Fig. 429) (S3).

[2716] Fig. 573 illustrates the software program stored in CCD Bar Code Reader Software Storage Area H27c (Fig. 569). Referring to Fig. 573, Host H (Fig. 429) compares the bar

code image data received from Communication Device 200 in S3 of Fig. 573 with the Pattern Images PTIm stored in Bar Code Pattern Data Storage Area H27b1 (Fig. 571) (S1). If the received bar code image data matches with one of the Pattern Images PTIm stored therein (S2), Host H retrieves Corresponding Data CPD which correspondes to the Pattern Image PTIm matched in S2 (S3). Host H utilizes Bar Code Pattern Data Working Area H27b2 as a work area for processing the foregoing steps S1 through S3.

[2717] Fig. 574 illustrates the sequence to implement the present function. Referring to Fig. 574, Host H (Fig. 429) sends Corresponding Data CPD, under the control of the software program stored in CCD Bar Code Reader Software Storage Area H27c (Fig. 569), which is retrieved in S3 of Fig. 573 (S1). Communication Device 200 receives Corresponding Data CPD via Antenna 218 (Fig. 1) and stores the data in a specific area of RAM 206 (Fig. 1) (S2). CPU 211 (Fig. 1) of Communication Device 200 processes with Corresponding Data CPD (e.g., display Corresponding Data CPD on LCD 201 (Fig. 1)) (S3).

[2718] *<<CCD Bar Code Reader Function -- Pattern Matching By Com. Device 200>>*

[2719] Figs. 575 through 579 illustrates the second embodiment

wherein the CCD bar code reader function implemented solely by Communication Device 200.

[2720] The data and software programs necessary to implement the present function are downloaded to Communication Device 200 from Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[2721] Fig. 575 illustrates the storage area included in RAM 206 (Fig. 1). As described in Fig. 575, RAM 206 includes CCD Bar Code Reader Information Storage Area 20627a of which the information stored therein is downloaded from Host H (Fig. 429). The details of which is described in Fig. 576.

[2722] Fig. 576 illustrates the storage areas included in CCD Bar Code Reader Information Storage Area 20627a (Fig. 575). As described in Fig. 576, CCD Bar Code Reader Information Storage Area 20627a includes CCD Bar Code Reader Data Storage Area 20627b and CCD Bar Code Reader Software Storage Area 20627c. CCD Bar Code Reader Data Storage Area 20627b stores the data necessary to implement the present function such as the ones described in Figs. 577 and 578. CCD Bar Code Reader Software Storage Area 20627c stores the software programs necessary to implement the present function such as the one described

in Figs. 579.

[2723] Fig. 577 illustrates the storages areas included in CCD Bar Code Reader Data Storage Area 20627b (Fig. 576). As described in Fig. 577, CCD Bar Code Reader Data Storage Area 20627b includes Bar Code Pattern Data Storage Area 20627b1 and Bar Code Pattern Data Working Area 20627b2. Bar Code Pattern Data Storage Area 20627b1 stores a plurality of bar code pattern data of which the details are described in Fig. 578. Bar Code Pattern Data Working Area 20627b2 is a work area utilized by CPU 211 (Fig. 1) to implement the present function.

[2724] Fig. 578 illustrates the data stored in Bar Code Pattern Data Storage Area 20627b1 (Fig. 577). As described in Fig. 578, the data stored in Bar Code Pattern Data Storage Area 20627b1 comprises three columns, i.e., Pattern ID PTI, Pattern Image PTIm, and Corresponding Data CPD. Pattern ID PTI is an identification of Pattern Image PTIm, Pattern Image PTIm is an image data of bar code which is compared with the image data input via CCD Unit 214 (Fig. 1) of which the details are described hereinafter, and Corresponding Data CPD is an alphanumeric data corresponding to Pattern Image PTIm. In the example described in Fig. 578, The pattern ID PTI#1 is an identification of

pattern image data PTIm#1 of which the corresponding alphanumeric data is CPD#1; the pattern ID PTI#2 is an identification of pattern image data PTIm#2 of which the corresponding alphanumeric data is CPD#2; the pattern ID PTI#3 is an identification of pattern image data PTIm#3 of which the corresponding alphanumeric data is CPD#3; the pattern ID PTI#4 is an identification of pattern image data PTIm#4 of which the corresponding alphanumeric data is CPD#4; the pattern ID PTI#5 is an identification of pattern image data PTIm#5 of which the corresponding alphanumeric data is CPD#5; the pattern ID PTI#6 is an identification of pattern image data PTIm#6 of which the corresponding alphanumeric data is CPD#6; the pattern ID PTI#7 is an identification of pattern image data PTIm#7 of which the corresponding alphanumeric data is CPD#7; the pattern ID PTI#8 is an identification of pattern image data PTIm#8 of which the corresponding alphanumeric data is CPD#8; the pattern ID PTI#9 is an identification of pattern image data PTIm#9 of which the corresponding alphanumeric data is CPD#9; and the pattern ID PTI#10 is an identification of pattern image data PTIm#10 of which the corresponding alphanumeric data is CPD#10. Basically, the data stored in Bar Code Pattern Data Storage Area

20627b1 is identical to the ones stored in Bar Code Pattern Data Storage Area H27b1 (Fig. 571) of Host H (Fig. 429).

[2725] Fig. 579 illustrates the software program stored in CCD Bar Code Reader Software Storage Area 20627c (Fig. 576). Referring to Fig. 579, CPU 211 (Fig. 1) of Communication Device 200 scans a bar code image data by utilizing CCD Unit 214 (Fig. 1) (S1). CPU 211 then compares the bar code image data input via CCD Unit 214 with the Pattern Images PTIm stored in Bar Code Pattern Data Storage Area 20627b1 (Fig. 578). If the received bar code image data matches with one of the Pattern Images PTIm stored therein (S2), CPU 211 retrieves Corresponding Data CPD which correspondes to the Pattern Image PTIm matched in S2 (S3). CPU 211 (Fig. 1) processes with Corresponding Data CPD (e.g., display Corresponding Data CPD on LCD 201 (Fig. 1)) (S4). CPU 211 utilizes Bar Code Pattern Data Working Area H27b2 as a work area for processing the foregoing steps S1 through S4.

[2726] *<<CCD Bar Code Reader Function -- Summary>>*

[2727] (1) A communication device comprising a microphone, a speaker, a CCD camera, a CPU and a multiple mode implementor which implements a voice communication

mode and a CCD bar code reader mode, wherein a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, and said CCD camera inputs a bar code image data and said CPU processes with a corresponding data of said bar code image data when said CCD bar code reader mode is implemented.

[2728] (2) Said communication device of summary (1), wherein said corresponding data is an alphanumeric data.

[2729] (3) Said communication device of summary (1), wherein said CPU processes with said corresponding data received from a host computer.

[2730] (4) Said communication device of summary (1), wherein said communication device further comprises a memory from which said corresponding data is retrieved.

[2731] *<<Online Renting Function>>*

[2732] Figs. 580 through 633 illustrate the online renting function which enables the user of Communication Device 200 to download from Host H (Fig. 429) and rent digital information for a certain period of time.

[2733] *<<Online Renting Function -- Host H>>*

[2734] Figs. 580 through 589 illustrate the data and software

programs stored in Host H (Fig. 429).

[2735] Fig. 580 illustrates the information stored in Host Information Storage Area H00a (Fig. 429). As described in Fig. 580, Host Information Storage Area H00a includes Online Renting Information Storage Area H28a of which the details are described in Fig. 581.

[2736] Fig. 581 illustrates the storage areas included in Online Renting Information Storage Area H28a (Fig. 580). As described in Fig. 581, Online Renting Information Storage Area H28a includes Online Renting Data Storage Area H28b and Online Renting Software Storage Area H28c. Online Renting Data Storage Area H28b stores the data necessary to implement the present function, such as the ones described in Figs. 582 through 588. Online Renting Software Storage Area H28c stores the software program such as the ones described in Fig. 589.

[2737] Fig. 582 illustrates the storage areas included in Online Renting Data Storage Area H28b (Fig. 581). As described in Fig. 582, Online Renting Data Storage Area H28b includes Digital Information Storage Area H28b1 and Registration Data Storage Area H28b2. Digital Information Storage Area H28b1 stores various types of digital information, such as songs, video games, word processing soft-

wares, and movies as described hereinafter. Registration Data Storage Area H28b2 stores the data regarding the payment status of the monthly fee of each user of Communication Device 200 as described in Fig. 588.

[2738] Fig. 583 illustrates the storage areas included in Digital Information Storage Area H28b1 (Fig. 582). As described in Fig. 583, Digital Information Storage Area H28b1 includes Song Information Storage Area H28b1a, Game Information Storage Area H28b1b, Word Information Storage Area H28b1c, and Movie Information Storage Area H28b1d. The data stored in Song Information Storage Area H28b1a are described in Fig. 584. The data stored in Game Information Storage Area H28b1b are described in Fig. 585. The data stored in Word Information Storage Area H28b1c are described in Fig. 586. The data stored in Movie Information Storage Area H28b1d are described in Fig. 587. The data stored in Digital Information Storage Area H28b1 are downloaded and performed by Communication Device 200 for a certain period of time as described hereinafter.

[2739] Fig. 584 illustrates the data stored in Song Information Storage Area H28b1a (Fig. 583). As described in Fig. 584, Song Information Storage Area H28b1a stores Song A

H28b1a1, Song B H28b1a2, and Song C H28b1a3. Song A H28b1a1, Song B H28b1a2, and Song C H28b1a3 are song and/or music data which are designed to be output from Speaker 216 (Fig. 1) of Communication Device 200. The data stored in Song Information Storage Area H28b1a are also capable to be output from any type of speakers of any type of personal computers.

[2740] Fig. 585 illustrates the data stored in Game Information Storage Area H28b1b (Fig. 583). As described in Fig. 585, Game Information Storage Area H28b1b stores Game A H28b1b1, Game B H28b1b2, and Game C H28b1b3. Game A H28b1b1, Game B H28b1b2, and Game C H28b1b3 are video game programs which are designed to be executed by Communication Device 200 and which display video game objects on LCD 201 (Fig. 1) manipulable by utilizing Input Device 210 (Fig. 1) or via voice recognition system. Shooting video game described in Fig. 270 and driving video game described in Fig. 284 are the examples of the video game programs stored in Game Information Storage Area H28b1b. The video game programs stored in Game Information Storage Area H28b1b are also capable to be executed by any type of personal computers.

[2741] Fig. 586 illustrates the data stored in Word Information

Storage Area H28b1c (Fig. 583). As described in Fig. 586, Word Information Storage Area H28b1c stores Word Processor A H28b1c1, Word Processor B H28b1c2, and Word Processor C H28b1c3. Word Processor A H28b1c1, Word Processor B H28b1c2, and Word Processor C H28b1c3 are word processing software programs designed to be executed by Communication Device 200 to type a plurality of alphanumeric data by utilizing Input Device 210 (Fig. 1) or via voice recognition system. 'Microsoft Word 2000' and 'Corel Word Perfect' are the examples of the word processing software programs stored in Word Information Storage Area H28b1c. The word processing software programs stored in Word Information Storage Area H28b1c are also capable to be executed by any type of personal computers.

[2742] Fig. 587 illustrates the data stored in Movie Information Storage Area H28b1d (Fig. 583). As described in Fig. 587, Movie Information Storage Area H28b1d stores Movie A H28b1d1, Movie B H28b1d2, and Movie C H28b1d3. Movie A H28b1d1, Movie B H28b1d2, and Movie C H28b1d3 are movie programs designed to be executed by Communication Device 200 to output video data from LCD 201 (Fig. 1) and audio data from Speaker 216 (Fig. 1). 'Ti-

tanic' and 'Star Wars' are the examples of the movie programs stored in Movie Information Storage Area H28b1d. Soap operas, situation comedies, news, and any type of TV programs are categorized as movie programs for purposes of implementing the present function. Soap operas, situation comedies, news, and any type of TV programs, as another embodiment, may be classified as different catogories to implement the present function. The movie programs stored in Movie Information Storage Area H28b1d are also capable to be executed by any type of personal computers.

[2743] Fig. 588 illustrates the data stored in Registration Data Storage Area H28b2 (Fig. 582) which is utilized in the embodiment described in Figs. 615 and 616 (Flat Rate). As described in Fig. 588, Registration Data Storage Area H28b2 stores the data regarding the payment status of each user of Communication Device 200, which is composed by two columns, i.e., User ID and Status. Here, User ID is an identification of a user of Communication Device 200 and Status represents the payment status of the monthly fee of the user. The single digit '1' represents that the corresponding user has payed the monthly fee of the current month, and the single digit '0' represents that

the corresponding user has not yet payed the monthly fee of the current month. In the example described in Fig. 588, the user whose User ID is 'User #1' has paid the monthly fee of the current month ('1'), the user whose User ID is 'User #2' has paid the monthly fee of the current month ('1'), the user whose User ID is 'User #3' has not yet paid the monthly fee of the current month ('0'), and the user whose User ID is 'User #4' has paid the monthly fee of the current month ('1').

[2744] Fig. 589 illustrates the storage areas included in Online Renting Software Storage Area H28c (Fig. 581). As described in Fig. 589, Online Renting Software Storage Area H28c includes Users' Status Checking Software Storage Area H28c1 and Administration Software Storage Area H28c2. Users' Status Checking Software Storage Area H28c1 stores a software program which checks and updates the payment status of the monthly fee of the current month of the users of Communication Device 200 of which the sequence is described in Fig. 590. Administration Software Storage Area H28c2 stores Administration Software H28ADS which is designed to be downloaded and executed by Communication Device 200 to implement the present function of which the details are described

hereinafter.

[2745] Fig 590 illustrates the software program stored in Users' Status Checking Software Storage Area H82c1 (Fig. 589). As described in Fig. 590, Host H (Fig. 429) checks each user's payment status (S1). This checking process is performed on a specific date of each month. If the monthly fee is paid (S2), the positive flag 1 is registered in the column 'Status' of the corresponding User ID (S4b). Even if the monthly fee is not paid on time (S2), the present function is still implemented so long as the monthly fee is paid within the grace period. Therefore, if the grace period has passed and the monthly fee is not yet paid (S3), the negative flag 0 is registered in the column 'Status' of the corresponding User ID (S4a).

[2746] The data and software programs necessary to implement the present function are downloaded to Communication Device 200 from Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[2747] *<<Online Renting Function -- Com. Device 200>>*

[2748] Figs. 591 through 619 illustrate the data and software programs stored in Communication Device 200 to implement the present function.

[2749] Fig. 591 illustrates the storage area included in RAM 206

(Fig. 1). As described in Fig. 591, RAM 206 includes Online Renting Information Storage Area 20628a of which the details are described in Fig. 592.

[2750] Fig. 592 illustrates the storage areas included in Online Renting Information Storage Area 20628a (Fig. 591). As described in Fig. 592, Online Renting Information Storage Area 20628a includes Online Renting Data Storage Area 20628b and Online Renting Software Storage Area 20628c. Online Renting Data Storage Area 20628b stores the data necessary to implement the present function, such as the ones described in Figs. 593 through 598. Online Renting Software Storage Area 20628c stores the software program such as the one described in Fig. 599.

[2751] Fig. 593 illustrates the storage area included in Online Renting Data Storage Area 20628b (Fig. 592). As described in Fig. 593, Online Renting Data Storage Area 20628b includes Digital Information Storage Area 20628b1. Digital Information Storage Area 20628b1 stores various types of digital information downloaded from Host H (Fig. 429) for renting purposes for a certain period of time, such as songs, video games, word processing softwares, and movies as described hereinafter.

[2752] Fig. 594 illustrates the storage areas included in Digital

Information Storage Area 20628b1 (Fig. 593). As described in Fig. 594, Digital Information Storage Area 20628b1 includes Song Information Storage Area 20628b1a, Game Information Storage Area 20628b1b, Word Information Storage Area 20628b1c, and Movie Information Storage Area 20628b1d. The data stored in Song Information Storage Area 20628b1a are described in Fig. 595. The data stored in Game Information Storage Area 20628b1b are described in Fig. 596. The data stored in Word Information Storage Area 20628b1c are described in Fig. 597. The data stored in Movie Information Storage Area 20628b1d are described in Fig. 598. Digital Information Storage Area 20628b1 primarily stores the information downloaded from Host H (Fig. 429), however, the data stored in Digital Information Storage Area 20628b1 of Communication Device 200 are not necessarily identical to the ones stored in Digital Information Storage Area H28b1 (Fig. 583) of Host H.

[2753] Fig. 595 illustrates the data stored in Song Information Storage Area 20628b1a (Fig. 594). In the example described in Fig. 595, Song Information Storage Area 20628b1a stores Song A 20628b1a1, Song B 20628b1a2, and Song C 20628b1a3 downloaded from Host H (Fig.

429). Song A 20628b1a1, Song B 20628b1a2, and Song C 20628b1a3 are song and/or music data which are designed to be output from Speaker 216 (Fig. 1) of Communication Device 200. The data stored in Song Information Storage Area 20628b1a are also capable to be output from any type of speakers of any type of personal computers.

[2754] Fig. 596 illustrates the data stored in Game Information Storage Area 20628b1b (Fig. 594). In the example described in Fig. 596, Game Information Storage Area 20628b1b stores Game A 20628b1b1, Game B 20628b1b2, and Game C 20628b1b3 downloaded from Host H (Fig. 429). Game A 20628b1b1, Game B 20628b1b2, and Game C 20628b1b3 are video game programs which are designed to be executed by Communication Device 200 and which display video game objects on LCD 201 (Fig. 1) manipulable by utilizing Input Device 210 (Fig. 1) or via voice recognition system. Shooting video game described in Fig. 270 and driving video game described in Fig. 284 are the examples of the video game programs stored in Game Information Storage Area 20628b1b. The video game programs stored in Game Information Storage Area 20628b1b are also capable to be

executed by any type of personal computers.

[2755] Fig. 597 illustrates the data stored in Word Information Storage Area 20628b1c (Fig. 594). In the example described in Fig. 597, Word Information Storage Area 20628b1c stores Word Processor A 20628b1c1, Word Processor B 20628b1c2, and Word Processor C 20628b1c3 downloaded from Host H (Fig. 429). Word Processor A 20628b1c1, Word Processor B 20628b1c2, and Word Processor C 20628b1c3 are word processing software programs designed to be executed by Communication Device 200 to type a plurality of alphanumeric data by utilizing Input Device 210 (Fig. 1) or via voice recognition system. 'Microsoft Word 2000' and 'Corel Word Perfect' are the examples of the word processing software programs stored in Word Information Storage Area 20628b1c. The word processing software programs stored in Word Information Storage Area 20628b1c are also capable to be executed by any type of personal computers.

[2756] Fig. 598 illustrates the data stored in Movie Information Storage Area 20628b1d (Fig. 594). In the example described in Fig. 598, Movie Information Storage Area 20628b1d stores Movie A 20628b1d1, Movie B

20628b1d2, and Movie C 20628b1d3 downloaded from Host H (Fig. 429). Movie A 20628b1d1, Movie B 20628b1d2, and Movie C 20628b1d3 are movie programs designed to be executed by Communication Device 200 to output video data from LCD 201 (Fig. 1) and audio data from Speaker 216 (Fig. 1). 'Titanic' and 'Star Wars' are the examples of the movie programs stored in Movie Information Storage Area 20628b1d. Soap operas, situation comedies, news, and any type of TV programs, the present example, are categorized as movie programs for purposes of implementing the present function. Soap operas, situation comedies, news, and any type of TV programs, as another embodiment, may be classified as different catogories to implement the present function. The movie programs stored in Movie Information Storage Area 20628b1d are also capable to be executed by any type of personal computers.

[2757] Fig. 599 illustrates the storage areas included in Online Renting Software Storage Area 20628c (Fig. 592). As described in Fig. 599, Online Renting Software Storage Area 20628c includes Administration Software Storage Area 20628c2. Administration Software Storage Area 20628c2 stores Administration Software 20628ADS which is down-

loaded from Host H (Fig. 429) and executed by CPU 211 (Fig. 1) to implement the present function of which the details are described hereinafter.

[2758] Fig. 600 illustrates the sequence of display shown on LCD 201 (Fig. 1). In response to the input signal generated by utilizing Input Device 210 (Fig. 1) or via voice recognition system, a list of digital information, such as songs (Song A, Song B,and Song C in the present example) which are to be rented, are displayed on LCD 201 (S1). The list displayed on LCD 201 are the list of the digital information stored in Digital Information Storage Area H28b1 (Fig. 583) of Host H (Fig. 429). Taking songs for an example, once the user of Communication Device 200 selects a song which he/she prefers via Input Device 210, he/she now selects the period of time which he/she desires to rent the song. As described in S2 of Fig. 5, the user selects from d. 1 day or e. 1 week or he/she can input a specified period of time (e.g., 10 days) in column f. to specify the rental period by utilizing Input Device 210 or via voice recognition system. The total amount charged is displayed thereafter (S3). Next, the user of Communication Device 200 chooses the payment method from the three choices, i.e., f. credit card, g. money order, or h.

personal check (S4). Once the sequence explained from S1 to S4 is completed, the download phase is initiated. Namely, the user selects the directory where he desires to store the digital information (S5) (not to mention, the directory may be automatically designated and therefore omit S5). Once the user chooses the directory, the downloading process is initiated (S6).

[2759] Fig. 601 illustrates the sequence of Administration Software 20628ADS stored in Administration Software Storage Area 20628c2 (Fig. 599) to perform the sequence described in Fig. 600. In response to the input signal generated by utilizing Input Device 210 (Fig. 1) or via voice recognition system, and by the operation of the Administration Software 20628ADS downloaded from Host H (Fig. 429), a list of digital information stored in Digital Information Storage Area H28b1 (Fig. 583) is downloaded from Host H and shown on LCD 201 as described in S1 of Fig. 600 (S1). Then one of the digital information is selected by utilizing Input Device 210 or via voice recognition system, which is transferred to CPU 211 (Fig. 1) via Data Bus 203 (Fig. 1) (S2). The rental period is selected by the same manner (S3). If the user chooses either d. 1 day or e. 1 week in S2 of Fig. 600, CPU 211 reads the data regarding

the amount charged from a specific area of RAM 206 (Fig. 1) (S4). Alternatively, if the user chooses f. (in S2 of Fig. 600) and inputs a desired figure, CPU 211 retrieves from a specific area of RAM 206 or calculates the amount charged and displays it on LCD 201 as described in S3 of Fig. 600 (S4). S4 is described in details in Fig. 601a hereinafter. Next, the payment method is selected by utilizing Input Device 210 or via voice recognition system, which is transferred to CPU 211 via Data Bus 203 (S5). Once the directory to store the digital information is selected (S6), CPU 211 sends the information regarding the title of the digital information, term (i.e., rental period), and the payment method to Host H (S7). When Host H receives the information from Communication Device 200, Host H transfers the selected digital information in return, and the downloading process is initiated (S8).

[2760] Fig. 601a illustrates S4 of Fig. 601 in details. Referring to Fig. 601a, if the user chooses either d. 1 day or e. 1 week in S2 of Fig. 600 (S1a), CPU 211 (Fig. 1) reads the data regarding the amount charged from RAM 206 (S2a), and displays the amount on LCD 201 (Fig. 1) (S3). Alternatively, if the user chooses f. (in S2 of Fig. 600) and inputs a desired figure (S1b), CPU 211 calculates the amount

(S2b) and displays the amount on LCD 201 (S3).

[2761] Fig. 602 illustrates another embodiment of Administration Software 20628ADS which is an improved version of the one described in Fig. 601. In response to the input signal generated by utilizing Input Device 210 (Fig. 1) or via voice recognition system, and by the operation of the Administration Software 20628ADS stored in Administration Software Storage Area 20628c2 (Fig. 599) downloaded from Host H (Fig. 429), a list of digital information stored in Digital Information Storage Area H28b1 (Fig. 583) is downloaded from Host H (S1). Then one of the titles is selected by the input signal input by utilizing Input Device 210 or via voice recognition system, which is transferred to CPU 211 (Fig. 1) via Data Bus 203 (Fig. 1) (S2). The rental period is selected by the same manner (S3). S2 and S3 are repeated if the user chooses to rent more than one title (S3a). If the user chooses either d. 1 day or e. 1 week in S2 of Fig. 600, CPU 211 reads the data regarding the amount charged from a specific area of RAM 206 (Fig. 1) (S4). Alternatively, if the user chooses f. (in S2 of Fig. 600) and inputs a desired figure, CPU 211 calculates the amount and displays the amount on LCD 201 (Fig. 1) (S4). S4 is further described in Fig. 601a hereinbefore. Next,

the payment method is selected by the input signal input by utilizing Input Device 210 or via voice recognition system, which is transferred to CPU 211 via Data Bus 203 (S5). Once the directory to store the digital information is selected (S6), CPU 211 sends the information regarding the title, term (i.e., rental period), payment method to Host H (S7). When Host H receives the information from Communication Device 200, Host H transfers the digital information in return, and the downloading process is initiated (S8).

[2762] Fig. 603 illustrates the sequence of displays shown on LCD 201 (Fig. 1) when the expiration date (time) is coming close. In the present embodiment, a reminder is shown at the right-hand corner of the screen which indicates that the license will be expired within three days (S1). Reminders will also be shown, in the preferred embodiment of the present invention, at the same position six hours and five minutes before the license expires (S2 and S3). Whenever the reminder is displayed on LCD 201, the user of Communication Device 200 has an option to extend the license. In the present example, the user can extend the license by choosing Yes shown on LCD 201 (S4). If the user chooses not to extend the license, the display in S5b

is shown. Instead if the user chooses to extend the license, the user is prompted as to the period of time the license is to be extended (S5a). The user can also input a desired extended time (e.g., 10 days) in column c. (S5a). The total amount charged is displayed thereafter (S6). The user chooses the payment method from the three choices, i.e., 1. credit card, 2. money order, or 3. personal check (S7), and a message of the extended period of time is displayed on LCD 201 (S8).

[2763] Fig. 604 illustrates the sequence of Administration Software 20628ADS stored in Administration Software Storage Area 20628c2 (Fig. 599) to perform the sequence described in Fig. 603. In response to the input signal generated by utilizing Input Device 210 (Fig. 1) or via voice recognition system, and by the operation of the Administration Software 20628ADS downloaded from Host H (Fig. 429), a timer is set and the expiration date/time is stored in Online Renting Data Storage Area 20628b (Fig. 592) (S1). Periodically the expiration date/time is compared with the current date/time (S2). Depending on the difference between the two figures calculated in S2, CPU 211 displays different reminders on LCD 201 as explained in S1 through S3 of Fig. 603.

[2764] Fig. 605 illustrates the sequence of Administration Software 20628ADS stored in Administration Software Storage Area 20628c2 (Fig. 599). Referring to Fig. 605, when CPU 211 (Fig. 1) displays a reminder as described in S4 of Fig. 603, it displays a prompt to extend the license as described in S4 of Fig. 603 (S1). If CPU 211 receives an input signal from the Input Device 210 (Fig. 1) or via voice recognition system indicating that the license is not going to be extended (S2), a certain message is displayed as shown in S5b of Fig. 603 (S7). Alternatively, if the license is extended (S2), the data regarding the extended period input by utilizing Input Device 210 or via voice recognition system is transferred to CPU 211 via Data Bus 203 (S3). If the user chooses either 1. 1 day or 2. 1 week in S5a of Fig. 603, CPU 211 reads the data regarding the amount charged from a specific area of RAM 206 (S4). Alternatively, if the user chooses 3. in S5a of Fig. 603 and inputs a desired figure, CPU 211 calculates and displays the amount on LCD 201 as described in S6 of Fig. 603 (S4). Next, the payment method is selected by utilizing Input Device 210 or via voice recognition system, and the data regarding the payment method is transferred to CPU 211 via Data Bus 203 (S5). CPU 211 sends the information re-

garding the extension, and when Host H (Fig. 429) receives the information from Communication Device 200, Host H transfers the permission data, which indicates that the license is extended and a message is displayed as described in S8 of Fig. 603 (S6).

[2765] Fig. 606 illustrates the first type of data stream sent from Host H (Fig. 429) to Communication Device 200 during the downloading process described in S8 of Fig. 601 and in S8 of Fig. 602. As described in Fig. 606, Data Stream H28DTSTM1 is composed of Audio Data H28DTSTM1a, Video Data H28DTSTM1b, and Software Program H28DTSTM1c. Audio Data H28DTSTM1a is a data designed to be output from Speaker 204 (Fig. 1) and from any type of speaker of which the data format is wave data, MIDI, MP3 and/or other digital formats. Video Data H28DTSTM1b is a data designed to be output from LCD 201 (Fig. 1) and any type of display of which the data format is GIF, MPEG and/or other digital formats. Software Program H28DTSTM1c is a software program designed to be executed by CPU 211 (Fig. 1) or any type of personal computer. Data Stream H28DTSTM1 is primarily utilized to download video game software programs stored in Game Information Storage Area H28b1b (Fig. 585) and

word processing softwares stored in Word Information Storage Area H28b1c (Fig. 586). Data Stream H28DTSTM1 is also utilized to download other types of software programs, such as calculators, schedulers, spreadsheet software programs, and other types of software programs.

[2766] Fig. 607 illustrates the second type of data stream sent from Host H (Fig. 429) to Communication Device 200 during the downloading process described in S8 of Fig. 601 and in S8 of Fig. 602. As described in Fig. 607, Data Stream H28DTSTM2 is composed of Audio Data H28DTSTM2a and Video Data H28DTSTM2b. Audio Data H28DTSTM2a is a data designed to be output from Speaker 204 (Fig. 1) and from any type of speaker of which the data format is wave data, MIDI, MP3 and/or other digital formats. Video Data H28DTSTM2b is a data designed to be output from LCD 201 (Fig. 1) and any type of display of which the data format is GIF, MPEG and/or other digital formats. Data Stream H28DTSTM2 is primarily utilized to download movies stored in Movie Information Storage Area 20628b1d (Fig. 587). Data Stream H28DTSTM2 is also utilized to download other types of audio visual data, such as soap operas, situation commedies, spreadsheet software programs, and other types of

audio visual data.

[2767] Fig. 608 illustrates the third type of data stream sent from Host H (Fig. 429) to Communication Device 200 during the downloading process described in S8 of Fig. 601 and in S8 of Fig. 602. As described in Fig. 608, Data Stream H28DTSTM3 is composed of Audio Data H28DTSTM3a. Audio Data H28DTSTM3a is a data designed to be output from Speaker 204 (Fig. 1) and from any type of speaker of which the data format is wave data, MIDI, MP3 and/or other digital formats. Data Stream H28DTSTM3 is primarily utilized to download songs stored in Song Information Storage Area 20628b1a (Fig. 584). Data Stream H28DTSTM3 is also utilized to download other types of audio data, such as BGMs, musics, and other types of audio data.

[2768] Fig. 609 illustrates the sequence of Administration Software 20628ADS stored in Administration Software Storage Area 20628c2 (Fig. 599) to prohibit the use of the digital information when the license is expired. Referring to Fig. 609, the expiration date/time is set and stored in a specific area of RAM 206 (Fig. 1) (S1). The expiration date/time is periodically compared with the current time/date (S2). If the license is not expired, the digital information is

enabled (or no action is implemented) (S3a). Alternatively, if the license is expired, the digital information is disabled (S3b). The sequence of S1 through S3 is applied to all pieces of digital information stored in Digital Information Storage Area 20628b1 (Fig. 594).

[2769] Fig. 610 illustrates another embodiment of Administration Software 20628ADS stored in Administration Software Storage Area 20628c2 (Fig. 599) to prohibit the use of the digital information when the license is expired. Referring to Fig. 610, the expiration date/time is set and stored in a specific area of RAM 206 (Fig. 1) (S1). The expiration date/ time is periodically compared with the current time/ date (S2). If the license is not expired, the digital information is enabled (or no action is implemented) (S3a). Alternatively, if the license is expired, the digital information is erased from RAM 206 (S3b). The sequence of S1 through S3 is applied to all pieces of digital information stored in Digital Information Storage Area 20628b1 (Fig. 594).

[2770] Fig. 611 illustrates the sequence of Administration Software 20628ADS stored in Administration Software Storage Area 20628c2 (Fig. 599) to prohibit producing illegal copies of the digital information stored in Digital Information Storage Area 20628b1 (Fig. 594). Referring to Fig.

611, Administration Software 20628ADS stored in Administration Software Storage Area 20628c2 (Fig. 599) periodically monitors the activities of CPU 211 (Fig. 1) (S1). If the Administration Software 20628ADS detects that the digital information stored in Digital Information Storage Area 20628b1 (Fig. 594) is about to be copied (S2), it nullifies or blocks the copy command (S3).

[2771] Fig. 612 illustrates the sequence of Administration Software 20628ADS stored in Administration Software Storage Area 20628c2 (Fig. 599) to prohibit producing illegal copies of the digital information stored in Digital Information Storage Area 20628b1 (Fig. 594). Referring to Fig. 612, Administration Software 20628ADS stored in Administration Software Storage Area 20628c2 (Fig. 599) periodically monitors the activities of CPU 211 (Fig. 1) (S1). If the Administration Software 20628ADS detects the digital information stored in Digital Information Storage Area 20628b1 (Fig. 594) is about to be copied (S2), it deletes the copied digital information from the destination directory (S3).

[2772] Fig. 613 illustrates the sequence of display shown on LCD 201 (Fig. 1) to provide an option to the user of Communication Device 200 to purchase the license and use the

program indefinitely in length of time. As described in Fig. 613, a prompt is shown on LCD 201 as described in S1. This prompt can be shown periodically during the license period or can be shown when the license is about to be expired. If the user chooses Yes in S1, then the amount charged is displayed (S2). Next, the user chooses the payment method from the three choices, i.e., 1. credit card, 2. money order, or 3. personal check (S3). Once the license is purchased, a message as shown in S4 is displayed on LCD 201.

[2773] Fig. 614 illustrates the sequence of Administration Software 20628ADS stored in Administration Software Storage Area 20628c2 (Fig. 599) to provide an option to the user of Communication Device 200 to purchase the license and use the program indefinitely in length of time as described in Fig. 613. Referring to Fig. 614, CPU 211 (Fig. 1) displays the prompt shown in S1 of Fig. 613. Whether the user chooses to purchase the license is determined by the input signal utilizing Input Device 210 or via voice recognition system, which is transferred to CPU 211 via Data Bus 203 (Fig. 1) (S2). If the user chooses Yes in S1 of Fig. 613, the amount charged is displayed on LCD 201 (Fig. 1) (S3). Next, the payment method is selected by the input

signal input by utilizing Input Device 210 or via voice recognition system, which is transferred to CPU 211 via Data Bus 203 (S4). CPU 211 sends the information regarding the purchase of the license to Host H (Fig. 429). When Host H receives the information from Communication Device 200 and completes the verification process, it transfers a key data to unlock the license. Once the Communication Device 200 receives the key data, CPU 211 makes the term indefinite in period of time (S5) and displays a phrase shown in S4 of Fig. 613. Either of the following two methods may be utilized to unlock the license: the first method is to make the term of rental period indefinite; and the second method is to sever the link between Administration Software 20628ADS and the digital information, and release the digital information from the control of Administration Software 20628ADS.

[2774] *<<Online Renting Function -- Flat Rate>>*

[2775] Figs. 615 and 616 illustrate another embodiment of the present function which enables to rent digital information with a flat rate. The drawing figures to explain the other embodiments of the present function also apply to this embodiment unless they are inconsistent with this embodiment. Primarily, Figs. 580 through 599, 606 through

608, 611 through 614, and 619a through 633 apply to this embodiment.

[2776] Fig. 615 illustrates the sequence of the displays shown on LCD 201 (Fig. 1). Referring to Fig. 615, a prompt to input the user ID and password is displayed (S1). Once the information regarding the user ID and the password are input to Communication Device 200 and transferred to Host H (Fig. 429), and the user ID and the password are verified, a certain message indicating that the user ID and the passowrd are verified is shown on LCD 201 (S2). A list of titles of the digital information is shown on LCD 201 (S3). The user selects one or more titles shown on LCD 201 by utilizing Input Device 210 (Fig. 1) or via voice recognition system which generates an input signal, which is transferred to CPU 211 (Fig. 1) via Input Interface 209 (Fig. 1) and Data Bus 203 (Fig. 1). Under the command of CPU 211 (Fig. 1), a request signal (not shown) is transferred to Host H (Fig. 429), and Host H transfers the relevant digital information in response. Before or while such sequence is performed, a screen to select the directory to store the digital information is displayed on LCD 201 (S4). The screen indicated in S5 is shown while the digital information is being transferred from Host H.

[2777] Fig. 616 illustrates the overall process from authentication to downloading the digital information. When the user inputs the user ID and password by utilizing Input Device 210 (Fig. 1) or via voice recognition system as described in S1 of Fig. 615, Host H (Fig. 429) initiates the authentication process (S1). If the positive flag (1) is found in Registration Data Storage Area H28b2 (Fig. 588), a display shown in S2 of Fig. 615 is output from LCD 201 (Fig. 1) and the sequence is continued to S3a. The sequence is continued to S3b if the negative flag (0) is found in Registration Data Storage Area H28b2. If the negative flag (0) is found, error information is transferred to Communication Device 200, which is displayed on LCD 201 (Fig. 1) (S3b). If the positive flag (1) is found, the list of titles is transferred to Communication Device 200, and is displayed on LCD 201 as described in S3 of Fig. 615 (S3a). The user can select one or more titles by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S4 and S5). Once the directory in which the digital information is to be stored is selected (S6), the downloading process is initiated (S7). As another embodiment, the number of the titles selected in S4 may be limited to a certain figure. As another embodiment, the digital information downloaded in S7 may be

configured to be utilized only for a certain period of time (therefore, primarily the concept described in Figs. 603 through 605, 609, and 610 apply to this embodiment).

[2778] *<<Online Renting Function -- (Sub) Category Display>>*

[2779] Figs. 617 and 618 illustrate another method to display the titles of the digital information described in Figs. 600 and 615. A list of main categories is displayed on LCD 201 (Fig. 1), and a list of sub-categories is displayed when one main category is selected. Referring to the example described in Fig. 617, a list of Main Categories 20628CTG1 is displayed on LCD 201. Assuming that the user of Communication Device 200 selects Songs by utilizing Input Device 210 (Fig. 1) or via voice recognition system, a list of Sub-categories 20628CTG2 of Songs as described in Fig. 618 is displayed.

[2780] Fig. 619 illustrates the sequence of Administration Software 20628ADS stored in Administration Software Storage Area 20628c2 (Fig. 599) to implement the embodiment described in Figs. 617 and 618. Referring to Fig. 619, CPU 211 (Fig. 1) downloads a category data containing information of Main Categories 20628CTG1 and Sub-categories 20628CTG2 of each digital information (S1). The category data may be stored in Digital Information

Storage Area H28b1 (Fig. 583) of Host H (Fig. 429). CPU 211 displays a list of Main Categories 20628CTG1 on LCD 201 (Fig. 1) as described in Fig. 617 (S2). The user of Communication Device 200 selects a certain category therefrom (e.g., Songs in the present example) by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S3), and a list of Sub-categories 20628CTG2 is displayed thereafter as described in Fig. 618 (S4) from which one title is selected (S5).

[2781] *<<Online Renting Function -- PC Download>>*

[2782] Figs. 619a through 631 illustrate an embodiment implementing the present fuction by further utilizing a personal computer. Communication Device 200 is utilized to select the digital information to be rented and the selected digital information is sent to Personal Computer PC (Fig. 619a) in which the selected digital information is stored. The digital information is primarily performed by Personal Computer PC in this embodiment.

[2783] Fig. 619a illustrates the storage area included in Personal Computer PC. As described in Fig. 619a, Personal Computer PC includes PC Information Storage Area PC00a of which the details are described hereinafter.

[2784] Fig. 620 illustrates the storage areas included in PC Infor-

mation Storage Area PC00a (not shown in drawings). Here, PC Information Storage Area PC00a is a storage means installed in Personal Computer PC (Fig. 619a). As described in Fig. 620, PC Information Storage Area H00a includes Online Renting Information Storage Area PC28a of which the details are described in Fig. 621.

[2785] Fig. 621 illustrates the storage areas included in Online Renting Information Storage Area PC28a (Fig. 620). As described in Fig. 621, Online Renting Information Storage Area PC28a includes Online Renting Data Storage Area PC28b and Online Renting Software Storage Area PC28c. Online Renting Data Storage Area PC28b stores the data necessary to implement the present function, such as the ones described in Figs. 622 through 628. Online Renting Software Storage Area PC28c stores the software program such as the one described in Fig. 629.

[2786] Fig. 622 illustrates the storage areas included in Online Renting Data Storage Area PC28b (Fig. 621). As described in Fig. 622, Online Renting Data Storage Area PC28b includes Digital Information Storage Area PC28b1 and Registration Data Storage Area PC28b2. Digital Information Storage Area PC28b1 stores various types of digital information downloaded from Host H (Fig. 429) for renting

purposes for a certain period of time, such as songs, video games, word processing softwares, and movies as described hereinafter.

[2787] Fig. 623 illustrates the storage areas included in Digital Information Storage Area PC28b1 (Fig. 622). As described in Fig. 623, Digital Information Storage Area PC28b1 includes Song Information Storage Area PC28b1a, Game Information Storage Area PC28b1b, Word Information Storage Area PC28b1c, and Movie Information Storage Area PC28b1d. The data stored in Song Information Storage Area PC28b1a are described in Fig. 624. The data stored in Game Information Storage Area PC28b1b are described in Fig. 625. The data stored in Word Information Storage Area PC28b1c are described in Fig. 626. The data stored in Movie Information Storage Area PC28b1d are described in Fig. 627. The digital information stored in Digital Information Storage Area PC28b1 are downloaded from Host H (Fig. 429) by the instruction received from Communication Device 200 as described hereinafter.

[2788] Fig. 624 illustrates the data stored in Song Information Storage Area PC28b1a (Fig. 623). In the example described in Fig. 624, Song Information Storage Area PC28b1a stores Song A PC28b1a1, Song B PC28b1a2, and

Song C PC28b1a3 downloaded from Host H (Fig. 429). Song A PC28b1a1, Song B PC28b1a2, and Song C PC28b1a3 are song and/or music data which are designed to be output from Speaker 216 (Fig. 1) of Communication Device 200. The data stored in Song Information Storage Area PC28b1a are also capable to be output from any type of speakers of any type of personal computers including Personal Computer PC (Fig. 619a).

[2789] Fig. 625 illustrates the data stored in Game Information Storage Area PC28b1b (Fig. 623). In the example described in Fig. 625, Game Information Storage Area PC28b1b stores Game A PC28b1b1, Game B PC28b1b2, and Game C PC28b1b3 downloaded from Host H (Fig. 429). Game A PC28b1b1, Game B PC28b1b2, and Game C PC28b1b3 are video game programs which are designed to be executed by Communication Device 200 and which display video game objects on LCD 201 (Fig. 1) manipulable by utilizing Input Device 210 (Fig. 1) or via voice recognition system. Shooting video game described in Fig. 270 and driving video game described in Fig. 284 are the examples of the video game programs stored in Game Information Storage Area PC28b1b. The video game programs stored in Game Information Storage Area PC28b1b

are also capable to be executed by any type of personal computers including Personal Computer PC (Fig. 619a).

[2790] Fig. 626 illustrates the data stored in Word Information Storage Area PC28b1c (Fig. 623). In the example described in Fig. 626, Word Information Storage Area PC28b1c stores Word Processor A PC28b1c1, Word Processor B PC28b1c2, and Word Processor C PC28b1c3 downloaded from Host H (Fig. 429). Word Processor A PC28b1c1, Word Processor B PC28b1c2, and Word Processor C PC28b1c3 are word processing software programs designed to be executed by Communication Device 200 to type a plurality of alphanumeric data by utilizing Input Device 210 (Fig. 1) or via voice recognition system. 'Microsoft Word 2000' and 'Corel Word Perfect' are the examples of the word processing software programs stored in Word Information Storage Area PC28b1c. The word processing software programs stored in Game Information Storage Area PC28b1b are also capable to be executed by any type of personal computers including Personal Computer PC (Fig. 619a).

[2791] Fig. 627 illustrates the data stored in Movie Information Storage Area PC28b1d (Fig. 623). In the example described in Fig. 627, Movie Information Storage Area

PC28b1d stores Movie A PC28b1d1, Movie B PC28b1d2, and Movie C PC28b1d3 downloaded from Host H (Fig. 429). Movie A PC28b1d1, Movie B PC28b1d2, and Movie C PC28b1d3 are movie programs designed to be executed by Communication Device 200 to output video data from LCD 201 (Fig. 1) and audio data from Speaker 216 (Fig. 1). 'Titanic' and 'Star Wars' are the examples of the movie programs stored in Movie Information Storage Area PC28b1d. Soap operas, situation comedies, news, and any type of TV programs are categorized as movie programs for purposes of implementing the present function. Soap operas, situation comedies, news, and any type of TV programs, as another embodiment, may be classified as different catogories to implement the present function. The movie programs stored in Movie Information Storage Area PC28b1d are also capable to be executed by any type of personal computers including Personal Computer PC (Fig. 619a).

[2792] Fig. 628 illustrates the storage areas included in Online Renting Software Storage Area PC28c (Fig. 621). As described in Fig. 628, Online Renting Software Storage Area PC28c includes Administration Software Storage Area PC28c2. Administration Software Storage Area PC28c2

stores Administration Software PC28ADS which is down-loaded from either Communication Device 200 or Host H (Fig. 429) and executed by Communication Device 200 to implement the present function of which the details are described hereinafter.

[2793] Fig. 629 illustrates the sequence of Administration Soft-ware 20628ADS stored in Online Renting Software Storage Area 20628c (Fig. 589) of Communication Device 200 to implement the present function by further utilizing Per-sonal Computer PC (Fig. 619a). The sequence described in Fig. 629 is performed before S6 of Fig. 601, S6 of Fig. 602, and/or S6 of Fig. 616. Referring to Fig. 629, a list of devices (including Personal Computer PC) which are capa-ble to download the digital information is displayed on LCD 201 (Fig. 1) (S1). The user of Communication Device 200 selectes one of the devices by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2). Assuming that the user selects Personal Computer PC in S2. A list of directories is displayed on LCD 201 (S3). The user selects one of the directories by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S4), and a Download In-struction 20628DIN is sent to Personal Computer PC of which the details are described in Fig. 630 (S5). Not to

mention, the directory may be automatically designated and therefore omit S4.

[2794] Fig. 630 illustrates the information included in Download Instruction 20628DIN described in S5 of Fig. 629. As described in Fig. 630, Download Instruction 20628DIN includes Personal Computer ID 20628DIN1, Directory ID 20628DIN2, Digital Information ID 20628DIN3, and Host ID 20628DIN4. Personal Computer ID 20628DIN1 is an identification of Personal Computer PC (Fig. 619a) selected in S2 of Fig. 629. Directory ID 20628DIN2 is an identification of the directory selected in S4 of Fig. 629. Digital Information ID 20628DIN3 is an identification of the digital information selected in S2 of Fig. 601, S2 of Fig. 602, or S4 of Fig. 616. Host ID 20628DIN4.is an identification of Host H (Fig. 429).

[2795] Fig. 631 illustrates the sequence of Administration Software PC28ADS stored in Online Renting Software Storage Area PC28c (Fig. 628) to download the digital information. Referring to Fig. 631, Personal Computer PC (Fig. 619a) recieves Download Instruction 20628DIN (Fig. 630) from Communication Device 200 (S1), and retrieves Directory ID 20628DIN2, Digital Information ID 20628DIN3, and Host ID 20628DIN4 therefrom (S2). Personal Computer PC

selects the directory in accordance with Directory ID 20628DIN2 (S3), and connects to Host H of which the Host ID is Host ID 20628DIN4 (S4). Personal Computer PC then requests for downloading the digital information by sending Digital Information ID 20628DIN3 to Host H (S5), and the downloading process is initiated thereafter (S6).

[2796] The concept described in the drawing figures to explain the present function, such as Figs. 604 through 614, 617, 618, and 619 apply to this embodiment.

[2797] *<<Online Renting Function -- Other Embodiments Of Administration Software >>*

[2798] As another embodiment, Administration Software H28ADS of Host H (Fig. 429), Administration Software 20628ADS of Communication Device 200, and Administration Software PC28ADS of Personal Computer PC (Fig. 619a) may be merged into one administration software program and be stored in Host H and implement the present function therefrom. As another embodiment, the merged administration software program may be stored in Communication Device 200 or Personal Computer PC and implement the present function therefrom.

[2799] *<<Online Renting Function -- Relationship Between Administration Software & Digital Information>>*

[2800] The preferred embodiment to implement the present function is to address the digital information and the administration software program as two different existances as already described hereinbefore. For example, the digital information in Host H (Fig. 429) is stored in Digital Information Storage Area H28b1 (Fig. 583) whereas Administration Software H28ADS in Host H is stored in Administration Software Storage Area H28c2 (Fig. 589). In the same manner, the digital information in Communication Device 200 is stored in Digital Information Storage Area 20628b1 (Fig. 594) whereas Administration Software 20628ADS in Communication Device 200 is stored in Administration Software Storage Area 20628c2 (Fig. 599); and the digital information in Personal Computer PC (Fig. 619a) is stored in Digital Information Storage Area PC28b1 (Fig. 623) whereas Administration Software 20628ADS in Personal Computer PC (Fig. 619a) is stored in Administration Software Storage Area PC28c2 (Fig. 628). Basically, one administration software program can administer more than one digital information. As another embodiment, the administration software program may be embedded in each digital information as described in Fig. 632. Here, the administration software program exists as

many as the digital information. As another embodiment, the digital information may be embedded in the administration software program as described in Fig. 633. Here, one administration software program can administer more than one digital information by incorporating more digital information into itself. As another embodiment, administration software program can be stored in Host H, Communication Device 200, Personal Computer PC, or anywhere else so long as administration software program 503 can administer digital information.

[2801] As another embodiment, administration software program may be divided into two parts, i.e., the first administration software program and the second administration software program. The first part administration software program in Host H, whereas the second part administration software program is transferred from Host H, via Network NT, to Communication Device 200 in which the second part administration software program is stored. The first administration software program and the second administration software program are designed to interact and cooperate each other, and the first part administration software program aids the implementation of the second part administration software program, and vice versa.

[2802] As another embodiment, instead of downloading and storing the digital information in a directory as described hereinbefore, a certain area of RAM 206 (Fig.. 1) may be utilized to temporarily store the digital information therein and can be erased therefrom once the digital information has been utilized or shown on LCD 201 (Fig. 1). Moreover, the digital information may be divided into a plurality of pieces and transfer the pieces in sequence from Host H to Communication Device 200. In this embodiment, each piece is temporarily stored in the certain area of RAM 206 and is erased therefrom once such piece is utilized or shown on LCD 201 while the next piece is ready to be stored in the certain area of RAM 206.

[2803] *<<Online Renting Function -- Summary>>*

[2804] (1) A wireless communication device comprising a microphone, a speaker, and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and an online renting mode, a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, a rented digital information is downloaded to said wirless communication device and authorized to be utilized for a predetermined period of time when said online renting mode is implemented.

[2805] (2) An online renting system comprising a host, a communication device, and an administration software program wherein said host which a storage area which stores a plurality of digital information, said plurality of digital information are categorized in a first category and a second category, a list of said plurality of digital information is displayed on said communication device, a digital information is selected from said list, said digital information is downloaded to said communication device, and said digital information is performed by said communication device for a predetermined period of time under the con-

trol of said administration software program.

[2806] (3) A host which comprises a storage area which stores a plurality of digital information, said plurality of digital information are categorized in a first category and a second category, the plurality of digital information categorized in said first category are composed of audio data and visual data, the plurality of digital information categorized in said second cateogry are composed of audio data, said host sends the digital information categorized in said first category if host receives a first request signal for the digital information categorized in said first category, and sends the digital information categorized in said second category if host receives a second request signal for the digital information categorized in said second category wherein the digital information categorized in said first category and the digital information categorized in said second category are enabled to be performed for a predetermined period of time.

[2807] (4) An administration software program which enables to display a list of digital information in a first category and a second category on a display of a computer, which enables to select a digital information from said list, which enables to download the selected digital information,

wherein said digital information is performed for a predetermined period of time under the control of said administration software program.

[2808] (5) A third party downloading system comprising a host, a communication device, wherein a list of digital information and a list of devices are displayed on said communication device, a digital information is selected by said communication device, said digital information is downloaded thereafter to one of the devices which displayed on said list of devices and which is selected by said communication device.

[2809] *<<SOS Calling Function>>*

[2810] Fig. 634 through 645 illustrate the SOS calling function which enables Communication Device 200 to notify the police department the current location of Communication Device 200 and the personal Information rmation of the user of Communication 200 when a 911 call is dialed from Communication Device 200.

[2811] Fig. 634 illustrates the storage area included in Host Information Storage Area H00a (Fig. 429). As described in Fig. 634, Host Information Storage Area H00a includes SOS Calling Information Storage Area H29a of which the data stored therein are described in Fig. 635.

[2812] Fig. 635 illustrates the storage areas included in SOS Calling Information Storage Area H29a (Fig. 634). As described in Fig. 635, SOS Calling Information Storage Area H29a includes SOS Calling Data Storage Area H29b and SOS Calling Software Storage Area H29c. SOS Calling Data Storage Area H29b stores the data necessary to implement the present function, such as the ones described in Figs. 636 and 637. SOS Calling Software Storage Area H29c stores the software programs necessary to implement the present function, such as the ones described in Figs. 644 and 645.

[2813] Fig. 636 illustrates the storage area included in SOS Calling Data Storage Area H29b (Fig. 635). As described in Fig. 636, SOS Calling Data Storage Area H29b includes Police Department Location Data Storage Area H29b1 of which the data stored therein are described in Fig. 637.

[2814] Fig. 637 illustrates the data stored in Police Department Location Data Storage Area H29b1 (Fig. 636). As illustrated in Fig. 637, Police Department Location Data Storage Area H29b1 includes three columns, i.e., Police Dept ID, Location Data, and Phone #. Police Dept ID represents the identification of a police department (e.g., NYPD). Location Data represents the geographical location data (in

x, y, z format) of the police department of the corresponding Police Dept ID. Phone # represents the phone number of the police department of the corresponding Police Dept ID. In the example described in Fig. 637, H29PD #1 is an identification of the police department of which the geographical location is H29LD #1 and of which the phone number is H29PN #1; H29PD #2 is an identification of the police department of which the geographical location is H29LD #2 and of which the phone number is H29PN #2; H29PD #3 is an identification of the police department of which the geographical location is H29LD #3 and of which the phone number is H29PN #3; and H29PD #4 is an identification of the police department of which the geographical location is H29LD #4 and of which the phone number is H29PN #4.

[2815] The data and software program necessary to implement the present function on the side of Communication Device 200 as described hereinafter are downloaded from Host H (Fig. 429) to Communication Device 200 in the manner described in Figs. 401 through 407.

[2816] Fig. 638 illustrates the storage area included in RAM 206 (Fig. 1) of Communication Device 200. As described in Fig. 638, RAM 206 includes SOS Calling Information Storage

Area 20629a of which the details are described in Fig. 639.

[2817] Fig. 639 illustrates the storage areas included in SOS Calling Information Storage Area 20629a (Fig. 638). As described in Fig. 639, SOS Calling Information Storage Area 20629a includes SOS Calling Data Storage Area 20629b and SOS Calling Software Storage Area 20629c. SOS Calling Data Storage Area 20629b includes data necessary to implement the present funtion, such as the ones described in Figs. 640 and 641. SOS Calling Software Storage Area 20629c stores the software programs necessary to implement the present functino, such as the one described in Fig. 642.

[2818] Fig. 640 illustrates storage areas included in SOS Calling Data Storage Area 20629b (Fig. 639). As described in Fig. 640, SOS Calling Data Storage Area 20629b includes GPS Data Storage Area 20629b1 and User Data Storage Area 20629b2. GPS Data Storage Area 20629b1 stores the data regarding the current geographical location produced by the method so-called GPS as described hereinbefore. User Data Storage Area 20629b2 stores the data regarding the personal information of the user of Communication Device 200 as described in Fig. 641.

[2819] Fig. 641 illustrates the data stored in User Data Storage Area 20629b2 (Fig. 640). As described in Fig. 641, User Data Storage Area 20629b2 includes User Data 20629UD which includes data regarding the personal information of the user of Communication Device 200. In the example described in Fig. 641, User Data 20629UD comprises Name, Age, Sex, Race, Blood Type, Home Address, and SSN. Name represents the name of the user of Communicatioin Device 200;Age represents the age of the user of Communicatioin Device 200; Sex represents the sex of the user of Communicatioin Device 200; Race represents the race of the user of Communicatioin Device 200; Blood Type represents the blood type of the user of Communicatioin Device 200; Home Address represents the home address of the user of Communicatioin Device 200; and SSN represents the social security number of the user of Communicatioin Device 200.

[2820] Fig. 642 illustrates the software program stored in SOS Calling Software Storage Area 20629c (Fig. 639). Referring to Fig. 642, when the user of Communication Device 200 inputs 911 by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1), CPU 211 (Fig. 1) calculates the GPS data, i.e., the current geographical location data

by utilizing the method so-called GPS as described hereinbefore (S2), and stores the GPS data in GPS Data Storage Area 20629b1 (Fig. 640) (S3). CPU 211 then retrieves User Data 20629UD from User Data Storage Area 20629b2 (Fig. 641) and the GPS data from GPS Data Storage Area 20629b1 (Fig. 640) (S4), and composes SOS Data 20629SOS therefrom (S5), which is sent thereafter to Host H (Fig. 429) (S6).

[2821] Fig. 643 illustrates the elements of SOS Data 20629SOS (Fig. 642). As described in Fig. 643, SOS Data 20629SOS comprises Connection Request 20629CR, GPS Data 20629GD, and User Data 20629UD. Connection Request 20629CR represents a request to Host H (Fig. 429) to forward the 911 call to a police department. GPS Data 20629GD is a data retrieved from GPS Data Storage Area 20629b1 (Fig. 641) as described in S4 of Fig. 642. User Data 20629UD is a data retrieved from User Data Storage Area 20629b2 (Fig. 641) as described in S4 of Fig. 642.

[2822] Fig. 644 illustrates the software program stored in SOS Calling Software Storage Area H29c (Fig. 635) of Host H (Fig. 429). Referring to Fig. 644, Host H periodically checks the incoming call (S1). If the incoming call is SOS Data 20629SOS (Fig. 643) (S2), Host H initiates the SOS

calling process as described in Fig. 645 (S3).

[2823] Fig. 645 illustrates the software program stored in SOS Calling Software Storage Area H29c (Fig. 635) of Host H (Fig. 429). Referring to Fig. 645, Host H retrieves GPS Data 20629GD from SOS Data 20629SOS (Fig. 643) (S1), and selects the closest police department by comparing GPS Data 20629GD and the data stored in column Location Data of Police Department Location Data Storage Area H29b1 (Fig. 637) of Host H (S2). Host H then retrieves the corresponding phone number stored in column Phone # and connects the line between the corresponding police department and Communication Device 200 in order to initiate a voice communication therebetween (S3). Host H forwards to the police department thereafter GPS Data 20629GD and User Data 20629UD retrieved in S1 (S4).

[2824] As another embodiment, User Data 20629UD stored in User Data Storage Area 20629b2 (Fig. 641) may be stored in SOS Calling Data Storage Area H29b (Fig. 635) of Host H (Fig. 429). In this embodiment, SOS Data 20629SOS (Fig. 642) primarily comprisesConnection Request 20629CR and GPS Data 20629GD, and User Data 20629UD is retrieved from SOS Calling Data Storage Area H29b of Host H, which is sent to the police department in

S4 of Fig. 645.

[2825] *<<Online Renting Function -- Summary>>*

[2826] (1) A wireless communication device comprising a microphone, a speaker,and a multiple mode implementor, whereinsaid multiple mode implementor implements a voice communication mode and anSOS calling mode, a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, an SOS information including a personal Information rmation of the user of said communication device is dispached when said SOS calling mode is implemented.

[2827] (2) An online renting system comprising a host, a communication device, and an SOS calling software program wherein said SOS calling software program is installed to said communication device, said communication device, under the control of said SOS calling software program sends an SOS Information rmation to said host, said host forwards said SOS Information rmation to a police department wherein said SOS Information rmation includes a personal Information rmation of the user of said communication device.

[2828] (3) A host comprising a storage area which stores an SOS

administration software program, said host periodically checks the incoming call, in the event said host receives an SOS Information rmation from a communication device, said host sends, under the control of said SOS administration software program, said SOS Information rmation to a police department with the personal Information rmation of the user of said communication device included therein.

[2829] (4) Said SOS Information rmation of the summaries (1) through (3) further includes GPS Information rmation indicating the current geographical location of said communication device.

[2830] *<<Input Device>>*

[2831] Fig. 646 illustrates the major elements of Input Device 210 (Fig. 1). As described in Fig. 646, Input Device 210 includes Numeric Data Input Device 21000a, Text Data Input Device 21000b, Function Data Input Device 21000c, and Joystick 21000d. Numeric Data Input Device 21000a is an input device to input numeric data of which the details are described in Fig. 647. Text Data Input Device 21000b is an input device to input text data of which the details are described in Fig. 648. Function Data Input Device 21000c is an input device designed to be utilized to

implement specific action(s) depending on the mode, function, or mode described in this specification of which the details are described in Fig. 649. Joystick 21000d is an input device to move the cursor or any object displayed on LCD 201 (Fig. 1) of which the details are described in Fig. 650.

[2832] Fig. 647 illustrates the major elementsof Numeric Data Input Device 21000a (Fig. 646). As described in Fig. 647, Numeric Data Input Device 21000a includes ten numeric keys, i.e., '1', '2', '3', '4', '5', '6', '7', '8', '9', and '0'. Numeric data '1' is input when numeric key '1' is pressed down. Numeric data '2' is input when numeric key '2' is pressed down. Numeric data '3' is input when numeric key '3' is pressed down. Numeric data '4' is input when numeric key '4' is pressed down. Numeric data '5' is input when numeric key '5' is pressed down. Numeric data '6' is input when numeric key '6' is pressed down. Numeric data '7' is input when numeric key '7' is pressed down. Numeric data '8' is input when numeric key '8' is pressed down. Numeric data '9' is input when numeric key '9' is pressed down. Numeric data '0' is input when numeric key '0' is pressed down.

[2833] Fig. 648 illustrates the major elements of Text Data Input

Device 21000b (Fig. 646). As described in Fig. 648, Text Data Input Device 21000b includes twenty-six text keys, i.e., 'a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j', 'k', 'l', 'm', 'n', 'o', 'p', 'q', 'r', 's', 't', 'u', 'v', 'w', 'x', 'y', and 'z'. Text data 'a' is input when text key 'a' is pressed down. Text data 'b' is input when text key 'b' is pressed down. Text data 'c' is input when text key 'c' is pressed down. Text data 'd' is input when text key 'd' is pressed down. Text data 'e' is input when text key 'e' is pressed down. Text data 'f' is input when text key 'f' is pressed down. Text data 'g' is input when text key 'g' is pressed down. Text data 'h' is input when text key 'h' is pressed down. Text data 'i' is input when text key 'i' is pressed down. Text data 'j' is input when text key 'j' is pressed down. Text data 'k' is input when text key 'k' is pressed down. Text data 'l' is input when text key 'l' is pressed down. Text data 'm' is input when text key 'm' is pressed down. Text data 'n' is input when text key 'n' is pressed down. Text data 'o' is input when text key 'o' is pressed down. Text data 'p' is input when text key 'p' is pressed down. Text data 'q' is input when text key 'q' is pressed down. Text data 'r' is input when text key 'r' is pressed down. Text data 's' is input when text key 's' is pressed down. Text data 't' is input

when text key 't' is pressed down. Text data 'u' is input when text key 'u' is pressed down. Text data 'v' is input when text key 'v' is pressed down. Text data 'w' is input when text key 'w' is pressed down. Text data 'x' is input when text key 'x' is pressed down. Text data 'y' is input when text key 'y' is pressed down. Text data 'z' is input when text key 'z' is pressed down.

[2834] Fig. 649 illustrates the major elements of Function Data Input Device 21000c (Fig. 646). As described in Fig. 649, Function Data Input Device 21000c includes five keys, i.e., F1, F2, F3, F4, and F5. Each key of Function Data Input Device 21000c is assigned to implement a specific function depending on each mode, function, or system described in this specification.

[2835] Fig. 650 illustrates the connection between Joystick 21000d (Fig. 646) and Communication Device 200. As described in Fig. 650, Joystick 21000d is rotatably attached to the surface of Communication Device 200. Joystick 21000d can be shifted up, down, left, right, and rotate clockwise and unti-clockwise. The concept of the mechanism of Joystick 21000d is introduced in the following inventions and the references cited thereof:U.S. Pat. No. 6,497,618, U.S. Pat. No. 6,461,242, U.S. Pat. No.

6,325,718, U.S. Pat. No. 6,264,558, U.S. Pat. No. 6,248,018, U.S. Pat. No. 6,241,611, U.S. Pat. No. 6,171,191, U.S. Pat. No. 6,106,398, U.S. Pat. No. 6,102,803, U.S. Pat. No. 6,007,428, U.S. Pat. No. 5,984,785, U.S. Pat. No. 5,911,627, U.S. Pat. No. 5,738,352, U.S. Pat. No. 5,624,117, U.S. Pat. No. 5,286,024, and U.S. Pat. No. 4,531,740. As another embodiment, a trackball may be utilized instead of Joystick 21000d to move the cursor or any object displayed on LCD 201 (Fig. 1).

[2836] *<<PC Remote Controlling Function>>*

[2837] Figs. 651 through 670 illustrate the PC remote controlling function which enables Communication Device 200 to remotely control a personal computer. The image displayed on the monitor of Personal Computer PC is displayed on LCD 201 (Fig. 1) of Communication Device 200, and the user of Communication Device 200 is able to remotely contol Personal Computer PC by utilizing Input Device 210 (Fig. 1) or via voice recognition system.

[2838] Fig. 651 illustrates the connection between Communication Device 200 and Personal Computer PC. As described in Fig. 651, Communication Device 200 and Personal Computer PC are linked and able to send and receive data

via Network NT.

[2839] Fig. 652 illustrates another embodiment of the connection between Communication Device 200 and Personal Computer PC. As described in Fig. 652, Communication Device 200 and Personal Computer PC may be directly linked, and send and receive data directly in a wireless fashion.

[2840] Figs. 653 through 656 illustrate the data and software program programs stored in Communication Device 200 to implement the present function on the side of Communication Device 200.

[2841] The data and software programs necessary to implement the present function on the side of Communication Device 200 are downloaded from Host H (Fig. 429) to Communication Device 200 in the manner described in Figs. 401 through 407.

[2842] Fig. 653 illustrates the storage area included in RAM 206 (Fig. 1). As described in Fig. 653, RAM 206 includes PC Remote Controlling Information Storage Area 20630a of which the data stored therein are described in Fig. 654.

[2843] Fig. 654 illustrates the storage areas included in PC Remote Controlling Information Storage Area 20630a (Fig. 653). As described in Fig. 654, PC Remote Controlling Information Storage Area 20630a includes PC Remote Con-

trolling Data Storage Area 20630b and PC Remote Controlling Software Storage Area 20630c. PC Remote Controlling Data Storage Area 20630b stores the data necessary to implement the present function on the side of Communication Device 200, such as the ones described in Figs. 655 and 656. PC Remote Controlling Software Storage Area 20630c stores the software programs necessary to implement the present function on the side of Communication Device 200, such as the ones described in Figs. 662 through 664, and 668 through 670.

[2844] Fig. 655 illustrates the storage areas included in PC Remote Controlling Data Storage Area 20630b (Fig. 654). As described in Fig. 655, PC Remote Controlling Data Storage Area 20630b includes PC ID Data Storage Area 20630b1, Input Signal Data Storage Area 20630b2, PC Display Data Storage Area 20630b3, and PC Download Data Storage Area 20630b4. PC ID Data Storage Area 20630b1 stores the identifications of a plurality of personal computers including Personal Computer PC (Figs. 651 and/or 652). Input Signal Data Storage Area 20630b2 stores the input signal data produced by Input Device 210 (Fig. 1) or via voice recognition system of which the details are described in Fig. 656. PC Display Data Storage Area

20630b3 stores the image data displayed on the monitor of Personal Computer PC (Figs. 651 and/or 652). PC Download Data Storage Area 20630b4 stores the data and/or software programs downloaded from Personal Computer PC.

[2845] Fig. 656 illustrates the data stored in Input Signal Data Storage Area 20630b2 (Fig. 655). As described in Fig. 656, Input Signal Data Storage Area 20630b2 stores Keyboard Data 20630b2a and Mouse Data 20630b2b both of which are produced by Input Device 210 (Fig. 1) or via voice recognition system. Keyboard Data 20630b2a is an input signal data designed to operate the keyboard of Personal Computer PC to input alphanumeric data thereto. Mouse Data 20630b2b is an input signal data designed to operate the mouse of Personal Computer PC to move the mouse pointer displayed on the monitor of Personal Computer PC and/or to select and click the folders displayed thereon.

[2846] Figs. 657 through 670 illustrate the data and software programs stored in Personal Computer PC (Figs. 651 and/or 652) to implement the present function on the side of Personal Computer PC.

[2847] The data and software programs necessary to implement

the present function on the side of Personal Computer PC (Figs. 651 and/or 652) are downloaded from Host H (Fig. 429) to Personal Computer PC in the similar manner described in Figs. 401 through 407.

[2848] Fig. 657 illustrates the storage area included in Personal Computer PC (Fig. 651 and/or 652). As described in Fig. 657, Personal Computer PC includes PC Information Storage Area PC00a.

[2849] Fig. 658 illustrates the storage area included in PC Information Storage Area PC00a (Fig. 657). As described in Fig. 658, PC Information Storage Area PC00a includes PC Remote Controlling Information Storage Area PC30a of which the data stored therein are described in Fig. 659.

[2850] Fig. 659 illustrates the storage areas included in PC Remote Controlling Information Storage Area PC30a (Fig. 658). As described in Fig. 659, PC Remote Controlling Data Storage Area PC30b and PC Remote Controlling Software Storage Area PC30c. PC Remote Controlling Data Storage Area PC30b stores the data necessary to implement the present function on the side of Personal Computer PC (Figs. 651 and/or 652), such as the ones described in Figs. 660 and 661. PC Remote Controlling Software Storage Area PC30c stores the software programs

necessary to implement the present function on the side of Personal Computer PC such as the ones described in Figs. 664, 667 through 670.

[2851] Fig. 660 illustrates the storages areas included in PC Remote Controlling Data Storage Area PC30b (Fig. 659). As described in Fig. 660, PC Remote Controlling Data Storage Area PC30b includes Authentication Data Storage Area PC30b1, Input Signal Data Storage Area PC30b2, PC Display Data Storage Area PC30b3, and PC Upload Data Storage Area PC30b4. Authentication Data Storage Area PC30b1 stores the authentication data regarding the user of Communication Device 200, i.e., the user ID and the password of the user to enable him/her to remotely control Personal Computer PC (Figs. 651 and/or 652) by implementing the present function. Input Signal Data Storage Area PC30b2 stores the input signal data produced by Input Device 210 (Fig. 1) or via voice recognition system of Communication Device 200 of which the details are described in Fig. 661. PC Display Data Storage Area PC30b3 stores the image data displayed on the monitor of Personal Computer PC. PC Upload Data Storage Area PC30b4 stores the data and/or software programs which are to be uploaded to Communication Device 200.

[2852] Fig. 661 illustrates the data stored in Input Signal Data Storage Area PC30b2 (Fig. 660). As described in Fig. 661, Input Signal Data Storage Area PC30b2 stores Keyboard Data PC30b2a and Mouse Data PC30b2b both of which are produced by Input Device 210 (Fig. 1) or via voice recognition system of Communication Device 200 and sent to Personal Computer PC (Fig. 651 and/or 652). Keyboard Data PC30b2a is an input signal data designed to operate the keyboard of Personal Computer PC to input alphanumeric data thereto. Mouse Data PC30b2b is an input signal data designed to operate the mouse of Personal Computer PC to move the mouse pointer displayed on a monitor of Personal Computer PC and/or selecting and clicking the folders displayed thereon.

[2853] Fig. 662 illustrates the software program stored in PC Remote Controlling Software Storage Area 20630c (Fig. 654). Referring to Fig. 662, an input signal to activate the present function is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 then retrieves the identifications of the personal computers including Personal Computer PC (Figs. 651 and/or 652) stored in PC ID Data Storage Area 20630b1 (Fig. 655) (S2), and displays a list of the personal computerson LCD 201

(Fig. 1) (S3). An input signal to select one of the personal computers displayed in S3 is input by utilizing Input Device 210 or via voice recognition system (S4), and the PC connection process is initiated thereafter of which the details are described in Fig. 663 (S5).

[2854] Fig. 663 illustrates the PC connection process described in S5 of Fig. 663 executed by the software program stored in PC Remote Controlling Software Storage Area 20630c (Fig. 654) of Communication Device 200. Referring to Fig. 663, a user ID and password are input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). The user ID and password are transferred to Personal Computer PC (Figs. 651 and/or 652) and compared with the ones stored in Authentication Data Storage Area PC30b1 (Fig. 660) (S2). If the user ID and password sent from Communication Device 200 are identical to the ones stored in Authentication Data Storage Area PC30b1 (S3), the PC remote control process is initiated thereafter of which the details are described in Fig. 664 (S4).

[2855] Fig. 664 illustrates the PC remote control process described in S4 of Fig. 663 executed by both the software program stored in PC Remote Controlling Software Storage Area 20630c (Fig. 654) of Communication Device 200

and the software program stored in PC Remote Controlling Software Storage Area PC30c (Fig. 659) of Personal Computer PC (Figs. 651 and/or 652). Referring to Fig. 664, the input signal data to remotely control Personal Computer PC (Figs. 651 and/or 652) is input by utilzing Input Device 210 (Fig. 1) or via voice recognition system and stored in Input Signal Data Storage Area 20630b2 (Fig. 655) of Communication Device 200 (S1). CPU 211 (Fig. 1) then sends to Personal Computer PC (Figs. 651 and/or 652) PC Control Signal 20630CS of which the details are described in Figs. 665 and 666 (S2). Once Personal Computer PC receives PC Control Signal 20630CS (S3), it retrieves Input Signal Data 20630CS3 (Fig. 666) (S4), and further retrieves Keyboard Data 20630b2a and Mouse Data 20630b2b therefrom and stores them to Input Signal Data Storage Area PC30b2 (Fig. 660) (S5). Keyboard Data 20630b2a and Mouse Data 20630b2b are treated as Keyboard Data PC30b2a and Mouse Data PC30b2b hereafter. The PC implementation process is initiated thereafter of which the details are described in Fig. 667 (S6). S1 and S2 are executed by Communication Device 200 and S3 through S6 are executed by Personal Computer PC.

[2856] Fig. 665 illustrates the data stored in PC Control Signal 20630CS described in S2 of Fig. 664. As described in Fig. 665, PC Control Signal 20630CS includes Communication Device ID 20630CS1, Personal Computer ID 20630CS2, and Input Signal Data 20630CS3. Communication Device ID 20630CS1 is an identification of Communication Device 200. Personal Computer ID 20630CS2 is an identification of Personal Computer PC (Fig. 651 and/or 652). Input Signal Data 20630CS3 is a data retrieved from Input Signal Data Storage Area 20630b2 (Fig. 655) of Communication Device 200 of which the details are described in Fig. 666.

[2857] Fig. 666 illustrates the data included in Input Signal Data 20630CS3 (Fig. 665). As described in Fig. 666, Input Signal Data 20630CS3 includes Keyboard Data 20630CS3a and Mouse Data 20630CS3b. Keyboard Data 20630CS3a is an input signal data designed to operate the keyboard of Personal Computer PC (Fig. 651 and/or 652) to input alphanumeric data thereto. Mouse Data 20630CS3b is an input signal data designed to operate the mouse of Personal Computer PC to move the mouse pointer displayed on a monitor of Personal Computer PC and/or to select and click the folders displayed thereon.

[2858] Fig. 667 illustrates the PC implementation process de-

scribed in S6 of Fig. 664 executed by the software program stored in PC Remote Controlling Software Storage Area PC30c (Fig. 659) of Personal Computer PC (Figs. 651 and/or 652). Referring to Fig. 667, Keyboard Data PC30b2a and Mouse Data PC30b2b are retrieved from Input Signal Data Storage Area PC30b2 (Fig. 660) and input to Personal Computer PC as input signals (S1). Personal Computer PC initiates a process in accordance with Keyboard Data PC30b2a and Mouse Data PC30b2b (S2). The process described in S2 is any type of process which Personal Computer PC is capable to implelment, for example: open/close a word processing software program, create/edit a document, send/receive an email, initiate a video game, start a movie, play a music (song), playbacka video, open/close a (sub)folder, select data, delete data, cut (copy) & paste data, send data in a wireless fashion, etc. Personal Computer PC then produces a PC display data in a real time (S3), which is stored in PC Display Data Storage Area PC30b3 (Fig. 660) (S4). Here, the PC display data is an image data displayed on the monitor of Personal Computer PC which is designed to be displayed on LCD 201 (Fig. 1) of Communication Device 200. The PC response process is initiated thereafter (S5).

[2859] Fg. 668 illustrates the PC response process described in S5 of Fig. 667 executed by both the software program stored in PC Remote Controlling Software Storage Area 20630c (Fig. 654) of Communication Device 200 and the software program stored in PC Remote Controlling Software Storage Area PC30c (Fig. 659) of Personal Computer PC (Figs. 651 and/or 652). Referring to Fig. 668, Personal Computer PC retirieves the PC display data from PC Display Data Storage Area PC30b3 (Fig. 660) (S1), which is sent to Communication Device 200 (S2). CPU 211 (Fig. 1) of Communication Device 200 stores the received PC display data to PC Display Data Storage Area 20630b3 (Fig. 655) (S3). CPU 211 then retrieves the PC display data from PC Display Data Storage Area 20630b3 (S4) and displays it on LCD 201 (Fig. 1) (S5). S1 and S2 are executed by Personal Computer PC and S3 through S5 are executed by Communication Device 200.

[2860] The sequence described in Figs. 664 through 668 is repeated for each input signal data produced in S1 of Fig. 664. The sequence described in Figs. 664 through 668 are normally repeated more than few times per second, thereby, the user of Communication Device 200 is capable to remotely control Personal Computer PC (Figs. 651 and/

or 652) in a real time.

[2861] The sequence of S3 of Fig. 667 through S5 of Fig. 668 is executed in the first place before initiating the sequence described in Figs. 664 through 668 to display the PC display data of Personal Computer PC (Fig. 651 and/or 652) on LCD 201 (Fig. 1) of Communication Device 200 upfront.

[2862] *<<PC Remote Controlling Function -- Download>>*

[2863] Figs. 669 and 670 illustrate the method to download files from Personal Computer PC (Figs. 651 and/or 652) to Communication Device 200. Figs. 651 through 668 apply to this embodiment except that Figs. 667 and 668 are replaced with the following Figs. 669 and 670 respectively. Assume that Input Signal Data 20630CS3 (Fig. 666) includes a command to downlaod a file from Personal Computer PC to Communication Device 200 produced by utilizing Input Device 210 (Fig. 1) or via voice recognition system.

[2864] Fig. 669 illustrates the PC implementation process described in S6 of Fig. 664 for purposes of downloading a file from Personal Computer PC (Figs. 651 and/or 652) to Communication Device 200. Such implementation is executed by both the software program stored in PC Remote

Controlling Software Storage Area 20630c (Fig. 654) of Communication Device 200 and the software program stored in PC Remote Controlling Software Storage Area PC30c (Fig. 659) of Personal Computer PC. Referring to Fig. 669, Keyboard Data PC30b2a and Mouse Data PC30b2b are retrieved from Input Signal Data Storage Area PC30b2 (Fig. 660) and input to Personal Computer PC as input signals (S1). Here, the combination of Keyboard Data PC30b2a and Mouse Data PC30b2b represents a download command of the selected file. Personal Computer PC initiates a process in accordance with Keyboard Data PC30b2a and Mouse Data PC30b2b, and stores the file selected in S1 to PC Upload Data Storage Area PC30b4 (Fig. 660) (S2). Personal Computer PC then produces a PC display data (S3), which is stored in PC Display Data Storage Area PC30b3 (Fig. 660) (S4). Here, the PC display data is an image data displayed on the monitor of Personal Computer PC which is designed to be displayed on LCD 201 (Fig. 1) of Communication Device 200. The PC response process is initiated thereafter (S5).

[2865] Fg. 670 illustrates the PC response process described in S5 of Fig. 667 executed by both the software program stored in PC Remote Controlling Software Storage Area

20630c (Fig. 654) of Communication Device 200 and the software program stored in PC Remote Controlling Software Storage Area PC30c (Fig. 659) of Personal Computer PC (Figs. 651 and/or 652). Referring to Fig. 670, Personal Computer PC retrieves the PC display data from PC Display Data Storage Area PC30b3 (Fig. 660) (S1) and the PC store data, i.e., the file selected in S1 of Fig. 669, from PC Upload Data Storage Area PC30b4 (Fig. 660) (S2), both of which are sent to Communication Device 200 (S3). CPU 211 (Fig. 1) of Communication Device 200 stores the received PC display data to PC Display Data Storage Area 20630b3 (Fig. 655) (S4) and the received PC store data to PC Download Data Storage Area 20630b4 (Fig. 655) (S5). CPU 211 then retrieves the PC display data from PC Display Data Storage Area 20630b3 (S6) and displays it on LCD 201 (Fig. 1) (S7). The PC store data stored in PC Download Data Storage Area 20630b4 can be processed thereafter in any way in accordance with the input signal input by utilizing Input Device 210 (Fig. 1) or via voice recognition system.

[2866] As another embodiment, the concept described in Figs. 651 through 670 may be applied to Personal Computer PC (Figs. 651 and/or 652) remotely controlling Communica-

tion Device 200. Namely, the image displayed on LCD 201 (Fig. 1) of Communication Device 200 is displayed on the monitor of Personal Computer PC, and the user of Personal Computer PC is able to remotely contol Communication Device 200 by utilizing the keyboard and/or the mouse of Personal Computer PC.

[2867] As another embodiment, the concept described in Figs. 651 through 670 may be applied to Communication Device 200 (Device A) remotely controlling another Communication Device 200 (Device B). Namely, the image displayed on LCD 201 (Fig. 1) of Device B is displayed on LCD 201 of Device A, and the user of Device A is able to remotely contol Device B by utilizing Input Device 210 (Fig. 1) or via voice recognition system of Device A.

[2868] *<<PC Remote Controlling Function -- Summary>>*

[2869] (1) A PC remote controlling system comprising a wireless communication device and a personal computer, said wireless communication device comprises a microphone, a speaker, a display, an input device and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and an PC remote controlling mode, a series of audio data are input to and output from said microphone and said speaker re-

spectively when said voice communication mode is implemented, a PC control signal input via said input device is transferred to said personal computer, and said personal computer operates in accordance with said PC control signal when said PC remote controlling mode is implemented.

[2870] (2) A wireless communication device comprising a microphone, a speaker, a display, an input device and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and an PC remote controlling mode, a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, a PC control signal input via said input device is transferred to a personal computer in order to operate said personal computer in accordance with said PC control signal when said PC remote controlling mode is implemented.

[2871] (3) A PC remote controlling software program installed in a wireless communication device comprising a microphone, a speaker, a display, an input device and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and

an PC remote controlling mode, a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, said PC remote controlling software program transfers a PC control signal produced by said input device to a personal computer in order to operate said personal computer in accordance with said PC control signal when said PC remote controlling mode is implemented.

[2872] *<<PC Remote Downloading Function>>*

[2873] Figs. 671 through 701 illustrate the PC remote downloading function which enables Communication Device 200 to remotely instruct a personal computer to transfer a data to another personal computer.

[2874] Fig. 671 illustrates the connection between Communication Device 200, Personal Computer PC#1, and Personal Computer PC#2. As described in Fig. 671, Communication Device 200, Personal Computer PC#1, and Personal Computer PC#2 are linked and capable to communicate via Network NT (e.g., the Internet). Personal Computer PC#1 and Personal Computer PC#2 are personal computers, such as desktops and/or laptops, controllable by the user of Communication Device 200.

[2875] Fig. 672 illustrates another embodiment of the connection between Communication Device 200, Personal Computer PC#1, and Personal Computer PC#2. As described in Fig. 672, Communication Device 200, Personal Computer PC#1, and Personal Computer PC#2 are directly connected to each other in a wireless fashion or by utilizing cables.

[2876] Fig. 673 illustrates the storage area included in RAM 206 (Fig. 1) of Communication Device 200. As described in Fig. 673, RAM 206 includes PC Remote Downloading Information Storage Area 20631a of which the data and software programs stored therein are described in Fig. 674.

[2877] The data and software programs stored in PC Remote Downloading Information Storage Area 20631a (Fig. 673) are downloaded from Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[2878] Fig. 674 illustrates the storage areas included in PC Remote Downloading Information Storage Area 20631a (Fig. 673). As described in Fig. 674, PC Remote Downloading Information Storage Area 20631a includes PC Remote Downloading Data Storage Area 20631b and PC Remote Downloading Software Storage Area 20631c. PC Remote Downloading Data Storage Area 20631b stores the data necessary to implement the present function on the side

of Communication Device 200, such as the ones described in Figs. 675 and 676. PC Remote Downloading Software Storage Area 20631c stores the software programs necessary to implement the present function on the side of Communication Device 200, such as the ones described in Figs. 685 through 689.

[2879] Fig. 675 illustrates the storage areas included in PC Remote Downloading Data Storage Area 20631b (Fig. 674). As described in Fig. 675, PC Remote Downloading Data Storage Area 20631b includes PC ID Data Storage Area 20631b1, PC Display Data Storage Area 20631b2, and Input Signal Data Storage Area 20631b3. PC ID Data Storage Area 20631b1 stores the identifications of the personal computers, including Personal Computer PC#1 and Personal Computer PC#2, which are capable to participate in implementing the present function. PC Display Data Storage Area 20631b2 stores the image data displayed on the monitors of Personal Computer PC#1 and Personal Computer PC#2 of which the details are described in Fig. 676. Input Signal Data Storage Area 20631b3 stores input signal data produced by Input Device 210 (Fig. 1) or via voice recognition system.

[2880] Fig. 676 illustrates the storage areas included in PC Dis-

play Data Storage Area 20631b2 (Fig. 675). As described in Fig. 676, PC Display Data Storage Area 20631b2 includes PC#1 Display Data Storage Area 20631b2a and PC#2 Display Data Storage Area 20631b2b. PC#1 Display Data Storage Area 20631b2a stores the image data displayed on the monitor of Personal Computer PC#1 received from Personal Computer PC#1. PC#2 Display Data Storage Area 20631b2b stores the image data displayed on the monitor of Personal Computer PC#2 received from Personal Computer PC#2.

[2881] Fig. 677 illustrates the storage area included in Personal Computer PC#1 (Figs. 671 and/or 672). As described in Fig. 677, Personal Computer PC#1 includes PC#1 Information Storage Area PC#1-00a of which the data and software programs stored therein are described in Fig. 678.

[2882] The data and software programs stored in PC#1 Information Storage Area PC#1-00a (Fig. 677) are downloaded from Host H (Fig. 429) in the similar manner described in Figs. 401 through 407.

[2883] Fig. 678 illustrates the storage area included in PC#1 Information Storage Area PC#1-00a (Fig. 677). As described in Fig. 678, PC#1 Information Storage Area PC#1-00a includes PC#1 Remote Downloading Information Storage

Area PC#1-31a of which the data and software programs stored therein are described in Fig. 679.

[2884] Fig. 679 illustrates the storages areas included in PC#1 Remote Downloading Information Storage Area PC#1-31a (Fig. 678). As described in Fig. 679, PC#1 Remote Downloading Information Storage Area PC#1-31a includes PC#1 Remote Downloading Data Storage Area PC#1-31b and PC#1 Remote Downloading Software Storage Area PC#1-31c. PC#1 Remote Downloading Data Storage Area PC#1-31b stores the data necessary to implement the present function on the side of Personal Computer PC#1, such as the ones described in Figs. 680. PC#1 Remote Downloading Software Storage Area PC#1-31c stores the software programs necessary to implement the present function on the side of Personal Computer PC#1, such as the ones described in Figs. 688 and 692.

[2885] Fig. 680 illustrates the storage areas included in PC#1 Remote Downloading Data Storage Area PC#1-31b (Fig. 679). As described in Fig. 680, PC#1 Remote Downloading Data Storage Area PC#1-31b includes PC#1 Uploading Data Storage Area PC#1-31b1, PC#1 Display Data Storage Area PC#1-31b2, and PC#1 Input Signal Data Storage Area PC#1-31b3. PC#1 Uploading Data Storage Area

PC#1-31b1 stores the data which is transferred to Personal Computer PC#2 (Figs. 671 and/or 672). PC#1 Display Data Storage Area PC#1-31b2 stores the image data displayed on the monitor of Personal Computer PC#1. PC#1 Input Signal Data Storage Area PC#1-31b3 stores the input signal data received from Communication Device 200 to remotely control Personal Computer PC#1 (Figs. 671 and/or 672).

[2886] Fig. 681 illustrates the storage area included in Personal Computer PC#2 (Figs. 671 and/or 672). As described in Fig. 681, Personal Computer PC#2 includes PC#2 Information Storage Area PC#2-00a of which the data and software programs stored therein are described in Fig. 682.

[2887] The data and software programs stored in PC#2 Information Storage Area PC#2-00a (Fig. 681) are downloaded from Host H (Fig. 429) in the similar manner described in Figs. 401 through 407.

[2888] Fig. 682 illustrates the storage area included in PC#2 Information Storage Area PC#2-00a (Fig. 681). As described in Fig. 682, PC#2 Information Storage Area PC#2-00a includes PC#2 Remote Downloading Information Storage Area PC#2-31a of which the data and software programs stored therein are described in Fig. 683.

[2889] Fig. 683 illustrates the storages areas included in PC#2 Remote Downloading Information Storage Area PC#2-31a (Fig. 682). As described in Fig. 683, PC#2 Remote Downloading Information Storage Area PC#2-31a includes PC#2 Remote Downloading Data Storage Area PC#2-31b and PC#2 Remote Downloading Software Storage Area PC#2-31c. PC#2 Remote Downloading Data Storage Area PC#2-31b stores the data necessary to implement the present function on the side of Personal Computer PC#2 (Figs. 671 and/or 672), such as the ones described in Figs. 684. PC#2 Remote Downloading Software Storage Area PC#2-31c stores the software programs necessary to implement the present function on the side of Personal Computer PC#2, such as the ones described in Figs. 689 and 693.

[2890] Fig. 684 illustrates the storage areas included in PC#2 Remote Downloading Data Storage Area PC#2-31b (Fig. 683). As described in Fig. 684, PC#2 Remote Downloading Data Storage Area PC#2-31b includes PC#2 Downloading Data Storage Area PC#2-31b1, PC#2 Display Data Storage Area PC#2-31b2, and PC#2 Input Signal Data Storage Area PC#2-31b3. PC#2 Downloading Data Storage Area PC#2-31b1 stores the data which is transferred from Per-

sonal Computer PC#1 (Figs. 671 and/or 672). PC#2 Display Data Storage Area PC#2-31b2 stores the image data displayed on the monitor of Personal Computer PC#2 (Figs. 671 and/or 672). PC#2 Input Signal Data Storage Area PC#2-31b3 stores the input signal data received from Communication Device 200 to remotely control Personal Computer PC#2.

[2891] Fig. 685 illustrates the software program stored in PC Remote Downloading Software Storage Area 20631c (Fig. 674) which identifies and register the identifications of the personal computers capable to participate in implementing the present function. Referring to Fig. 685, CPU 211 (Fig. 1) sends an identification request to all recognized personal computers (S1). Here, the identification request is a signal which requests to send back a response to Communication Device 200. If a response to the identification request including the identification of the responding personal computer is returned (S2), CPU 211 registers the identification of such personal computer to PC ID Data Storage Area 20631b1 (Fig. 675) (S3). Assume that each of Personal Computer PC#1 and Personal Computer PC#2 (Figs. 671 and/or 672) returns the response described in S2 and their identifications are stored in PC

ID Data Storage Area 20631b1.

[2892] Fig. 686 illustrates the software program stored in PC Remote Downloading Software Storage Area 20631c (Fig. 674) which selects the personal computer from which a data is transferred. Referring to Fig. 686, an input signal which indicates to initiate the process to select the personal computer from which a data is transferred is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) retrieves all identifications of the personal computers stored in PC ID Data Storage Area 20631b1 (Fig. 675) (S2), and displays a list of these identifications on LCD 201 (Fig. 1) (S3). A personal computer is selected from the list by utilizing Input Device 210 or via voice recognition system (S4). Assume that Personal Computer PC#1 (Figs. 671 and/or 672) is selected in S4.

[2893] Fig. 687 illustrates the software program stored in PC Remote Downloading Software Storage Area 20631c (Fig. 674) which selects the personal computer to which a data is transferred from the personal computer selected in S4 of Fig. 686 (i.e., Personal Computer PC#1). Referring to Fig. 687, an input signal which indicates to initiate the process to select the personal computer to which a data is

transferred is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) retrieves all identifications of the personal computers stored in PC ID Data Storage Area 20631b1 (Fig. 675) (S2), and displays a list of these identifications on LCD 201 (Fig. 1) (S3). A personal computer is selected from the list by utilizing Input Device 210 or via voice recognition system (S4). Assume that Personal Computer PC#2 (Figs. 671 and/or 672) is selected in S4.

[2894] Fig. 688 illustrates both the software program stored in PC Remote Downloading Software Storage Area 20631c (Fig. 674) of Communication Device 200 and the software program stored in PC#1 Remote Downloading Software Storage Area PC#1-31c (Fig. 679) of Personal Computer PC#1 (Figs. 671 and/or 672) which select the transferring data stored in Personal Computer PC#1 to be transferred to Personal Computer PC#2 (Figs. 671 and/or 672). Referring to Fig. 688, CPU 211 (Fig. 1) of Communication Device 200 sends a directory request to Personal Computer PC#1 (S1). Personal Computer PC#1, in response to the directory request, retrieves the data regarding its directory structure including the identifications of the data (including software programs and other types of informa-

tion) stored in each directory (S2) and sends the data to Communication Device 200 (S3). Upon receiving the data from Personal Computer PC#1, CPU 211 of Communication Device 200 displays the directories of Personal Computer PC#1 on LCD 201 (Fig. 1) including the identifications of the data stored in each directory (S4). A certain directory is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S5). The transferring data which is to be transferred to Personal Computer PC#2 is selected thereafter in the same manner from the directory selected in S5 (S6).

[2895] Fig. 689 illustrates both the software program stored in PC Remote Downloading Software Storage Area 20631c (Fig. 674) of Communication Device 200 and the software program stored in PC#2 Remote Downloading Software Storage Area PC#2-31c (Fig. 683) of Personal Computer PC#2(Figs. 671 and/or 672)which select the directory of Personal Computer PC#2in which the transferring data seleceted in S6 of Fig. 688 is to be stored. Referring to Fig. 689, CPU 211 (Fig. 1) of Communication Device 200 sends a directory request to Personal Computer PC#2 (S1). Personal Computer PC#2, in response to the directory request, retrieves the data regarding its directory structure

including the identifications of the data stored in each directory (S2) and sends the data to Communication Device 200 (S3). Upon receiving the data from Personal Computer PC#2, CPU 211 of Communication Device 200 displays the directories of Personal Computer PC#2 on LCD 201 (Fig. 1) including the identifications of the data stored in each directory (S4). A certain directory is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system in which the transferring data seleceted in S6 of Fig. 688 is to be stored (S5).

[2896] Fig. 690 illustrates the software program stored in PC Remote Downloading Software Storage Area 20631c (Fig. 674) of Communication Device 200 which initiates the data transfer from Personal Computer PC#1 to Personal Computer PC#2(Figs. 671 and/or 672). Referring to Fig. 690, CPU 211 (Fig. 1) of Communication Device 200 sends Data Transfer Initiation Signal 20631TIS to Personal Computer PC#1 of which the data included therein are described in Fig. 691.

[2897] Fig. 691 illustrates the data included in Data Transfer Initiation Signal 20631TIS (Fig. 690). As described in Fig. 691, Data Transfer Initiation Signal 20631TIS includes Communication Device ID 20631TIS1, Personal Computer

PC#1 ID 20631TIS2, Personal Computer PC#2 ID 20631TIS3, PC#1 Directory 20631TIS4, PC#1 Transferring Data File Name 20631TIS5, and PC#2 Directory 20631TIS6. Communication Device ID 20631TIS1 is the identification of Communication Device 200. Personal Computer PC#1 ID 20631TIS2 is the identification of Personal Computer PC#1(Figs. 671 and/or 672). Personal Computer PC#2 ID 20631TIS3 is the identification of Personal Computer PC#2(Figs. 671 and/or 672). PC#1 Directory 20631TIS4 is an identification of the directory of Personal Computer PC#1 in which the transferring data selected in S6 of Fig. 688 is to be stored. PC#1 Transferring Data File Name 20631TIS5 is an identification of the transferring data selected in S6 of Fig. 688. PC#2 Directory 20631TIS6 is an identification of the directory of Personal Computer PC#2 in which the transferring data sent from Personal Computer PC#1 is to be stored.

[2898] Fig. 692 illustrates the software program stored in PC#1 Remote Downloading Software Storage Area PC#1-31c (Fig. 679) of Personal Computer PC#1 (Figs. 671 and/or 672) which sends the transferring data selected in S6 of Fig. 688 to Personal Computer PC#2 (Figs. 671 and/or 672). Upon receiving Data Transfer Initiation Signal

20631TIS (Fig. 691) from Communication Device 200 (S1), Personal Computer PC#1 retrieves Personal Computer PC#1 ID 20631TIS2, Personal Computer PC#2 ID 20631TIS3, PC#1 Directory 20631TIS4, PC#1 Transferring Data File Name 20631TIS5, and PC#2 Directory 20631TIS6 therefrom (S2). Personal Computer PC#1 then retrieves the transferring data selected in S6 of Fig. 688 from its storage area (not shown in the drawings) (S3), and produces PC#1 Transferring Data PC#1TD (S4). The data included in Produce PC#1 Transferring Data PC#1TD are described in Fig. 692a. Personal Computer PC#1 stores PC#1 Transferring Data PC#1TD in PC#1 Uploading Data Storage Area PC#1-31b1 (Fig. 680) (S5). PC#1 Transferring Data PC#1TD is retrieved and sent to Personal Computer PC#2 (Figs. 671 and/or 672) thereafter (S6).

[2899] Fig. 692a illustrates the data included in PC#1 Transferring Data PC#1TD (Fig. 692). As described in Fig. 692a, PC#1 Transferring Data PC#1TD includes Communication Device ID PC#1TD1, Personal Computer PC#1 ID PC#1TD2, Personal Computer PC#2 ID PC#1TD3, PC#1 Directory PC#1TD4, PC#1 Transferring Data File Name PC#1TD5, PC#2 Directory PC#1TD6, and PC#1 Store Data PC#1TD7. Communication Device ID PC#1TD1 is the iden-

tification of Communication Device 200. Personal Computer PC#1 ID PC#1TD2 is the identification of Personal Computer PC#1(Figs. 671 and/or 672). Personal Computer PC#2 ID PC#1TD3 is the identification of Personal Computer PC#2(Figs. 671 and/or 672). PC#1 Directory PC#1TD4 is an identification of the directory of Personal Computer PC#1 in which the transferring data selected in S6 of Fig. 688 is stored. PC#1 Transferring Data File Name PC#1TD5 is an identification of the transferring data selected in S6 of Fig. 688. PC#2 Directory PC#1TD6 is an identification of the directory of Personal Computer PC#2 in which the transferring data sent from Personal Computer PC#1 is to be stored. PC#1 Transferring Data PC#1TD7 is the data retrieved in S3 of Fig. 692.

[2900] Fig. 693 illustrates the software program stored in PC#2 Remote Downloading Software Storage Area PC#2-31c (Fig. 683) of Personal Computer PC#2 (Figs. 671 and/or 672) which receives the transferring data selected in S6 of Fig. 688 sent from Personal Computer PC#1 (Figs. 671 and/or 672). Upon receiving PC#1 Transferring Data PC#1TD (Fig. 692a) (S1), Personal Computer PC#2 stores the data to PC#2 Downloading Data Storage Area PC#2-31b1 (Fig. 684) (S2). Personal Computer PC#2 re-

trieves PC#2 Directory PC#1TD6 from PC#1 Transferring Data PC#1TD (S3), and further retieves PC#1 Transferring Data PC#1TD7 therefrom (S4). Personal Computer PC#2 stores PC#1 Transferring Data PC#1TD7 to the directory identified by PC#2 Directory PC#1TD6 retrieved in S3 (S5), and sends to Communication Device 200 a data transfer completion signal which indicates that the transferring data has been received and stored in Personal Computer PC#2.

[2901] *<<PC Remote Downloading Function -- Other Embodiments>>*

[2902] As another embodiment, all software programs described hereinbefore to implement the present function, i.e., the software programs stored in PC Remote Downloading Software Storage Area 20631c (Fig. 674) of Communication Device 200, PC#1 Remote Downloading Software Storage Area PC#1-31c (Fig. 679) of Personal Computer PC#1 (Figs. 671 and/or 672), and PC#2 Remote Downloading Software Storage Area PC#2-31c (Fig. 683) of Personal Computer PC#2 (Figs. 671 and/or 672), may be stored and executed from Host H (Fig. 429).

[2903] As another embodiment, one of the following three may be stored and executed from Host H: the software programs stored in PC Remote Downloading Software Storage

Area 20631c (Fig. 674) of Communication Device 200,PC#1 Remote Downloading Software Storage Area PC#1-31c (Fig. 679) of Personal Computer PC#1 (Figs. 671 and/or 672), and PC#2 Remote Downloading Software Storage Area PC#2-31c (Fig. 683) of Personal Computer PC#2 (Figs. 671 and/or 672). As another embodiment, two of the foregoing three may be stored and executed from Host H.

[2904] Figs. 694 through 697 illustrate another embodiment of the software program described in Fig. 688.

[2905] Fig. 694 illustrates both the software program stored in PC Remote Downloading Software Storage Area 20631c (Fig. 674) of Communication Device 200 and the software program stored in PC#1 Remote Downloading Software Storage Area PC#1-31c (Fig. 679) of Personal Computer PC#1 (Figs. 671 and/or 672) which displays on LCD 201 (Fig. 1) the image data displayed on the monitor of Personal Computer #1. Referring to Fig. 694, CPU 211 (Fig. 1) of Communication Device 200 sends a display data request to Personal Computer PC#1 (Figs. 671 and/or 672). Here, the display data request is a request to send the image data displayed on the monitor of Personal Computer #1. Upon receiving the display data request, Personal

Computer PC#1 retireves the PC#1 display data which represents the image data displayed on the monitor of Personal Computer #1 from PC#1 Display Data Storage Area PC#1-31b2 (Fig. 680) (S2). The PC#1 display data is sent by Personal Computer PC#1 (S3), which is received by Communication Device 200 (S4). CPU 211 of Communication Device 200 stores the PC#1 display data to PC#1 Display Data Storage Area 20631b2a (Fig. 676) (S5).

[2906] Fig. 695 illustrates the software program stored in PC Remote Downloading Software Storage Area 20631c (Fig. 674) of Communication Device 200. Referring to Fig. 695, CPU 211 (Fig. 1) of Communication Device 200 retrieves the PC#1 display data from PC#1 Display Data Storage Area 20631b2a (Fig. 676) and displays the data on LCD 201 (Fig. 1) (S1). A certain directory is selected by the input signal data produced by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2), and the input signal data is stored in Input Signal Data Storage Area 20631b3 (Fig. 675) (S3). CPU 211 then retrieves and sends the input signal data to Personal Computer PC#1 (S4).

[2907] Fig. 696 illustrates the software program stored in PC#1 Remote Downloading Software Storage Area PC#1-31c (Fig. 679) of Personal Computer PC#1 (Figs. 671 and/or

672) which processes with the input signal data received from Communication Device 200. Referring to Fig. 696, Personal Computer PC#1 receives the input signal data from Communication Device 200 sent in S4 of Fig. 695 (S1). Personal Computer PC#1 stores the input signal data in PC#1 Input Signal Data Storage Area PC#1-31b3 (Fig. 680) (S2). Personal Computer PC#1 processes with the input signal data as if the input signal data is input via its input device (e.g., keyboard and mouse) (S3). The process in the present example is to highlight and/or open the directory selected in S2 of Fig. 695. After the process in S3 is completed, the image data displayed on the monitor of Personal Computer PC#1 reflecting the process in S3 is stored in PC#1 Display Data Storage Area PC#1-31b2 (Fig. 680) (S4). Personal Computer PC#1 retrieves the PC#1 display data from PC#1 Display Data Storage Area PC#1-31b2 (S5), and sends the data to Communication Device 200 (S6).

[2908] Fig. 697 illustrates the software program stored in PC Remote Downloading Software Storage Area 20631c (Fig. 674) of Communication Device 200. Referring to Fig. 697, CPU 211 (Fig. 1) of Communication Device 200 receives the PC#1 display data (S1) and stores the data to PC#1

Display Data Storage Area 20631b2a (Fig. 676) thereafter (S2).

[2909] The sequence described in Figs. 695 through 697 is repeated for each input signal data produced by utilizing Input Device 210 (Fig. 1) or via voice recognition system. The following description is based on the assumption which the user of Communication Device 200 is selecting the transferring data stored in the directory selected in S2 of Fig. 695 hereinbefore.

[2910] Referring to Fig. 695, CPU 211 (Fig. 1) of Communication Device 200 retrieves the PC#1 display data from PC#1 Display Data Storage Area 20631b2a (Fig. 676) and displays the data on LCD 201 (Fig. 1) (S1). A transferring data which is to be transferred to Personal Computer PC#2 (Figs. 671 and/or 672) stored in the directory selected in S2 of Fig. 695 hereinbefore is selected by the input signal data produced by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2), and the input signal data is stored in Input Signal Data Storage Area 20631b3 (Fig. 675) (S3). CPU 211 then retrieves and sends the input signal data to Personal Computer PC#1 (Figs. 671 and/or 672) (S4). Referring to Fig. 696, Personal Computer PC#1 receives the input signal data from Communication Device

200 sent in S4 of Fig. 695 (S1). Personal Computer PC#1 stores the input signal data in PC#1 Input Signal Data Storage Area PC#1-31b3 (Fig. 680) (S2). Personal Computer PC#1 processes with the input signal data as if the input signal data is input via its input device (e.g., keyboard and mouse) (S3). The process described in S3 in the present example is to select the transferring data identified in S2 of Fig. 695. After the process in S3 is completed, the image data displayed on the monitor of Personal Computer PC#1 reflecting the process in S3 is stored in PC#1 Display Data Storage Area PC#1-31b2 (Fig. 680) (S4). Personal Computer PC#1 retrieves the PC#1 display data from PC#1 Display Data Storage Area PC#1-31b2 (S5), and sends the data to Communication Device 200 (S6). Referring to Fig. 697, CPU 211 (Fig. 1) of Communication Device 200 receives the PC#1 display data (S1) and stores the data to PC#1 Display Data Storage Area 20631b2a (Fig. 676) thereafter (S2).

[2911] Figs. 698 through 701 illustrate another embodiment of the software program described in Fig. 689.

[2912] Fig. 698 illustrates both the software program stored in PC Remote Downloading Software Storage Area 20631c (Fig. 674) of Communication Device 200 and the software

program stored in PC#2 Remote Downloading Software Storage Area PC#2-31c (Fig. 683) of Personal Computer PC#2 (Figs. 671 and/or 672) which displays on LCD 201 (Fig. 1) the image data displayed on the monitor of Personal Computer #2. Referring to Fig. 698, CPU 211 (Fig. 1) of Communication Device 200 sends a display data request to Personal Computer PC#2. Here, the display data request is a request to send the image data displayed on the monitor of Personal Computer #2. Upon receiving the display data request, Personal Computer PC#2 retrieves the PC#2 display data which represents the image data displayed on the monitor of Personal Computer #2 from PC#2 Display Data Storage Area PC#2-31b2 (Fig. 684) (S2). The PC#2 display data is sent from Personal Computer PC#2 (S3), which is received by Communication Device 200 (S4). CPU 211 of Communication Device 200 stores the PC#2 display data toPC#2 Display Data Storage Area 20631b2b (Fig. 676) (S5).

[2913] Fig. 699 illustrates the software program stored in PC Remote Downloading Software Storage Area 20631c (Fig. 674) of Communication Device 200. Referring to Fig. 699, CPU 211 (Fig. 1) of Communication Device 200 retrieves the PC#2 display data from PC#2 Display Data Storage

Area 20631b2b (Fig. 676) and displays the data on LCD 201 (Fig. 1) (S1). A certain directory is selected by the input signal data produced by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2), and the input signal data is stored in Input Signal Data Storage Area 20631b3 (Fig. 675) (S3). CPU 211 then retrieves and sends the input signal data to Personal Computer PC#2 (S4).

[2914] Fig. 700 illustrates the software program stored in PC#2 Remote Downloading Software Storage Area PC#2-31c (Fig. 683) of Personal Computer PC#2 (Figs. 671 and/or 672) which processes with the input signal data received from Communication Device 200. Referring to Fig. 700, Personal Computer PC#2 receives the input signal data from Communication Device 200 sent in S4 of Fig. 699 (S1). Personal Computer PC#2 stores the input signal data in PC#2 Input Signal Data Storage Area PC#2-31b3 (Fig. 684) (S2). Personal Computer PC#2 processes with the input signal as if the input signal data is input via its input device (e.g., keyboard and mouse) (S3). The process in the present example is to highlight and/or open the directory selected in S2 of Fig. 699. After the process in S3 is completed, the image data displayed on the monitor of Personal Computer PC#2 reflecting the process in S3 is

stored in PC#2 Display Data Storage Area PC#2-31b2 (Fig. 684) (S4). Personal Computer PC#2 retrieves the PC#2 display data from PC#2 Display Data Storage Area PC#2-31b2 (S5), and sends the data to Communication Device 200 (S6).

[2915] Fig. 701 illustrates the software program stored in PC Remote Downloading Software Storage Area 20631c (Fig. 674) of Communication Device 200. Referring to Fig. 701, CPU 211 (Fig. 1) of Communication Device 200 receives the PC#2 display data (S1) and stores the data to PC#2 Display Data Storage Area 20631b2b (Fig. 676) thereafter (S2).

[2916] The sequence described in Figs. 695 through 697 may be utilized to send the tranferring data from Personal Computer PC#1 to Personal Computer PC#2.

[2917] Referring to Fig. 695, CPU 211 (Fig. 1) of Communication Device 200 retrieves the PC#1 display data from PC#1 Display Data Storage Area 20631b2a (Fig. 676) and displays the data on LCD 201 (Fig. 1) (S1). An input signal data instructing Personal Computer PC#1 (Figs. 671 and/or 672) to transfer the tranferring data selected hereinbefore to Personal Computer PC#2 (Figs. 671 and/or 672) is input by utilizing Input Device 210 (Fig. 1) or via voice

recognition system (S2), and the input signal data is stored in Input Signal Data Storage Area 20631b3 (Fig. 675) (S3). CPU 211 then retrieves and sends the input signal data to Personal Computer PC#1 (S4). Referring to Fig. 696, Personal Computer PC#1 receives the input signal data from Communication Device 200 sent in S4 of Fig. 695 (S1). Personal Computer PC#1 stores the input signal data in PC#1 Input Signal Data Storage Area PC#1-31b3 (Fig. 680) (S2). Personal Computer PC#1 processes with the input signal data as if the input signal data is input via its input device (e.g., keyboard and mouse) (S3). The process described in S3 is to transfer the transferring data identified hereinbefore. After the process in S3 is completed, the image data displayed on the monitor of Personal Computer PC#1 reflecting the process in S3 is stored in PC#1 Display Data Storage Area PC#1-31b2 (Fig. 680) (S4). Personal Computer PC#1 retrieves the PC#1 display data from PC#1 Display Data Storage Area PC#1-31b2 (S5), and sends the data to Communication Device 200 (S6). Referring to Fig. 697, CPU 211 (Fig. 1) of Communication Device 200 receives the PC#1 display data (S1) and stores the data to PC#1 Display Data Storage Area 20631b2a (Fig. 676) thereafter (S2). The sequence

described in Fig. 693 is initiated by Personal Computer PC#2 (Figs. 671 and/or 672) thereafter.

[2918] *<<PC Remote Downloading Function -- Summary>>*

[2919] (1) A remote downloading system comprising a communication device, a first personal computer, and a second personal computer, wherein said communication device and said first personal computer are capable to intercommunicate, said first personal computer and said second computer are capable to intercommunicate, said communication device sends a data transfer request to said first personal computer, said first personal computer retrieves a transferring data stored therein, and said first personal computer sends said transferring data to said second personal computer.

[2920] (2) A communication device comprising a display and an input device, wherein a list of personal computers is displayed on said display, a first personal computer which stores and sends a transferring data is selected from said list by utilizing said input device, a second personal computer which receives said transferring data is selected from said list by utilizing said input device, said communication device identifies the location of said transferring data in said first personal computer, and said communi-

cation device sends a data transfer request to said first personal computer, thereby said first personal computer sends said transferring data to said second personal computer in accordance with said data transfer request.

[2921] (3) A remote downloading software program wherein a list of personal computers is displayed on a display of a communication device under the control of said remote downloading software program, a first personal computer which stores and sends a transferring data is selected from said list by an input device of said communication device under the control of said remote downloading software program, a second personal computer which receives said transferring data is selected from said list by said input device under the control of said remote downloading software program, said communication device identifies the location of said transferring data in said first personal computer under the control of said remote downloading software program, and said communication device sends a data transfer request to said first personal computer under the control of said remote downloading software program, thereby said first personal computer sends said transferring data to said second personal computer in accordance with said data transfer request.

[2922] *<<Audiovisual Playback Function>>*

[2923] Figs. 702 through 716 illustrate the audiovisual playback function which enables Communication Device 200 to playback audiovisual data, such as movies, soap operas, situation comedies, news, and any type of TV programs.

[2924] Fig. 702 illustrates the information stored in RAM 206 (Fig. 1). As described in Fig. 702, RAM 206 includes Audiovisual Playback Information Storage Area 20632a of which the information stored therein are described in Fig. 703.

[2925] The data and software programs necessary to implement the present function are downloaded to Communication Device 200 from Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[2926] Fig. 703 illustrates the data and software programs stored in Audiovisual Playback Information Storage Area 20632a (Fig. 702). As described in Fig. 703, Audiovisual Playback Information Storage Area 20632a includes Audiovisual Playback Data Storage Area 20632b and Audiovisual Playback Software Storage Area 20632c. Audiovisual Playback Data Storage Area 20632b stores the data necessary to implement the present function, such as the ones described in Figs. 704 through 706. Audiovisual Playback

Software Storage Area 20632c stores the software programs necessary to implement the present function, such as the ones described in Fig. 707.

[2927] Fig. 704 illustrates the data stored in Audiovisual Playback Data Storage Area 20632b (Fig. 703). As described in Fig. 704, Audiovisual Playback Data Storage Area 20632b includes Audiovisual Data Storage Area 20632b1 and Message Data Storage Area 20632b2. Audiovisual Data Storage Area 20632b1 stores a plurality of audiovisual data described in Fig. 705. Message Data Storage Area 20632b2 stores a plurality of message data described in Fig. 706.

[2928] Fig. 705 illustrates the audiovisual data stored in Audiovisual Data Storage Area 20632b1 (Fig. 704). As described in Fig. 705, Audiovisual Data Storage Area 20632b1 stores a plurality of audiovisual data wherein the audiovisual data stored therein in the present example are: Audiovisual Data 20632b1a, Audiovisual Data 20632b1b, Audiovisual Data 20632b1c, and Audiovisual Data 20632b1d, all of which are primarily composed of video data and audio data. Audiovisual Data 20632b1a is a movie, Audiovisual Data 20632b1b is a soap opera, Audiovisual Data 20632b1c is a situation comedy, Audiovi-

sual Data 20632b1d is TV news in the present embodiment. The data stored in Audiovisual Data Storage Area 20632b1 may be the same or similar to the ones described in TV Data Storage Area 206f (Fig. 99) and/or Video Data Storage Area 20610c (Fig. 228). As another embodiment, Audiovisual Data 20632b1d may be an audiovisual data taken via CCD Unit 214 (Fig. 1) and Microphone 215 (Fig. 1).

[2929] Fig. 706 illustrates the data stored in Message Data Storage Area 20632b2 (Fig. 704). As described in Fig. 706, Message Data Storage Area 20632b2 includes Start Message Text Data 20632b2a, Stop Message Text Data 20632b2b, Pause Message Text Data 20632b2c, Resume Message Text Data 20632b2c1, Slow Replay Message Text Data 20632b2d, Forward Message Text Data 20632b2e, Rewind Message Text Data 20632b2f, Next Message Text Data 20632b2g, andPrevious Message Text Data 20632b2h. Start Message Text Data 20632b2a is a text data which is displayed on LCD 201 (Fig. 1) and which indicates that the playback of an audiovisual data is initiated. Stop Message Text Data 20632b2b is a text data which is displayed on LCD 201 and which indicates that the playback process of an audiovisual data is stopped.

Pause Message Text Data 20632b2c is a text data which is displayed on LCD 201 and which indicates that the play-back process of an audiovisual data is paused. Resume Message Text Data 20632b2c1 is a text data which is dis-played on LCD 201 and which indicates that the playback process of an audiovisual data is resumed from the point it is paused. Slow Replay Message Text Data 20632b2d is a text data which is displayed on LCD 201 and which indi-cates that the playback process of an audiovisual data is implemented in a slow motion. Fast-Forward Message Text Data 20632b2e is a text data which is displayed on LCD 201 and which indicates that an audiovisual data is fast-forwarded. Fast-Rewind Message Text Data 20632b2f is a text data which is displayed on LCD 201 and which indicates that an audiovisual data is fast-rewinded. Next Message Text Data 20632b2g is a text data which is displayed on LCD 201 and which indicates that the playback process of the next audiovisual data stored in Audiovisual Data Storage Area 20632b1 (Fig. 705) is initiated. Previous Message Text Data 20632b2h is a text data which is displayed on LCD 201 and which indi-cates that the playback process of the previous audiovi-sual data stored in Audiovisual Data Storage Area

20632b1 (Fig. 705) is initiated.

[2930] Fig. 707 illustrates the software programs stored in Audiovisual Playback Software Storage Area 20632c (Fig. 703). As described in Fig. 707, Audiovisual Playback Software Storage Area 20632c includes Audiovisual Start Software 20632c1, Audiovisual Stop Software 20632c2, Audiovisual Pause Software 20632c3, Audiovisual Resume Software 20632c3a, Audiovisual Slow Replay Software 20632c4, Audiovisual Fast-Forward Software 20632c5, Audiovisual Fast-Rewind Software 20632c6, Audiovisual Next Software 20632c7, and Audiovisual Previous Software 20632c8. Audiovisual Start Software 20632c1 is a software program which initiates the playback process of an audiovisual data. Audiovisual Stop Software 20632c2 is a software program which stops the playback process of an audiovisual data. Audiovisual Pause Software 20632c3 is a software program which pauses the playback process of an audiovisual data. Audiovisual Resume Software 20632c3a is a software program which resumes the playback process of the audiovisual data from the point it is paused by Audiovisual Pause Software 20632c3. Audiovisual Slow Replay Software 20632c4 is a software program which implements the playback process of an audiovisual

data in a slow motion. Audiovisual Fast-Forward Software 20632c5 is a software program which fast-forwards an audiovisual data. Audiovisual Fast-Rewind Software 20632c6 is a software program which fast-rewinds an audiovisual data. Audiovisual Next Software 20632c7 is a software program which initiates the playback process of the next audiovisual data stored in Audiovisual Data Storage Area 20632b1 (Fig. 705). Audiovisual Previous Software 20632c8 is a software program which initiates the playback process of the previous audiovisual data stored in Audiovisual Data Storage Area 20632b1.

[2931] Fig. 708 illustrates the messages displayed on LCD 201 (Fig. 1). As described in Fig. 708, eight types of messages are displayed on LCD 201, i.e., 'Start', 'Stop', 'Pause', 'Resume', 'Slow Reply', 'Fast-Forward', 'Fast-Rewind', 'Next', and 'Previous'. 'Start' is Start Message Text Data 20632b2a, 'Stop' is Stop Message Text Data 20632b2b, 'Pause' is Pause Message Text Data 20632b2c, 'Resume' is Resume Message Text Data 20632b2c1, 'Slow Reply' is Slow Replay Message Text Data 20632b2d, 'Fast-Forward' is Fast-Forward Message Text Data 20632b2e, 'Fast-Rewind' is Fast-Rewind Message Text Data 20632b2f, 'Next' is Next Message Text Data 20632b2g, 'Previous' is

Previous Message Text Data 20632b2h described in Fig. 706 hereinbefore.

[2932] Fig. 708a illustrates Audiovisual Selecting Software 20632c9 stored in Audiovisual Playback Software Storage Area 20632c (Fig. 703) in preparation of executing the software programs described in Figs. 709 through 716. Referring to Fig. 708a, CPU 211 (Fig. 1) retrieves the identifications of the audiovisual data stored in Audiovisual Data Storage Area 20632b1 (Fig. 705) (S1). CPU 211 then displays a list of the identifications on LCD 201 (Fig. 1) (S2). A particular audiovisual data is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S3).

[2933] Figs. 709 through 716 illustrates the software programs stored in Audiovisual Playback Software Storage Area 20632c (Fig. 703). As described in each drawing figure hereinafter, nine types of input signals can be input by utilizing Input Device 210 (Fig. 1) or via voice recognition system, i.e., the audiovisual playback signal, the audiovisual stop signal, the audiovisual pause signal, the audiovisual resume signal, the audiovisual slow replay signal, the audiovisual fast-forward signal, the audiovisual fast-rewind signal, the audiovisual next signal, and the audio-

visual previous signal. The audiovisual playback signal indicates to initiate the playback process of the audiovisual data selected in S3 of Fig. 708a. The audiovisual stop signal indicates to stop the playback process of the audiovisual data selected in S3 of Fig. 708a. The audiovisual pause signal indicates to pause the playback process of the audiovisual data selected in S3 of Fig. 708a. The audiovisual resume signal indicates to resume the playback process of the audiovisual data selected in S3 of Fig. 708a from the point the audio data is paused. The audiovisual slow replay signal indicates to implement the playback process of the audiovisual data selected in S3 of Fig. 708a in a slow motion. The audiovisual fast-forward signal indicates to fast-forward the audiovisual data selected in S3 of Fig. 708a. The audiovisual fast-rewind signal indicates to fast-rewind the audiovisual data selected in S3 of Fig. 708a. The audiovisual next signal indicates to initiate the playback process of the next audiovisual data of the audiovisual data selected in S3 of Fig. 708a both of which are stored in Audiovisual Data Storage Area 20632b1 (Fig. 705). The audiovisual previous signal indicates to initiate the playback process of the previous audiovisual data of the audiovisual data selected in S3 of Fig. 708a both of

which are stored in Audiovisual Data Storage Area 20632b1.

[2934] Fig. 709 illustrates Audiovisual Start Software 20632c1 stored in Audiovisual Playback Software Storage Area 20632c (Fig. 703) which initiates the playback process of the audiovisual data selected in S3 of Fig. 708a. Referring to Fig. 709, the audiovisual playback signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) then initiates the playback process (i.e., outputs the audio data from Speaker 216 (Fig. 1) and display the video data on LCD 201 (Fig. 1)) of the audiovisual data selected in S3 of Fig. 708a (S2), and retrieves Start Message Text Data 20632b2a from Message Data Storage Area 20632b2 (Fig. 704) and displays the data on LCD 201 (Fig. 1) for a specified period of time (S3).

[2935] Fig. 710 illustrates Audiovisual Stop Software 20632c2 stored in Audiovisual Playback Software Storage Area 20632c (Fig. 703) which stops the playback process of the audiovisual data selected in S3 of Fig. 708a. Referring to Fig. 710, the audiovisual stop signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) then stops the playback process of

the audiovisual data selected in S3 of Fig. 708a (S2), and retrieves Stop Message Text Data 20632b2b from Message Data Storage Area 20632b2 (Fig. 704) and displays the data on LCD 201 (Fig. 1) for a specified period of time (S3).

[2936] Fig. 711 illustrates Audiovisual Pause Software 20632c3 stored in Audiovisual Playback Software Storage Area 20632c (Fig. 703) which pauses the playback process of the audiovisual data selected in S3 of Fig. 708a. Referring to Fig. 711, the audiovisual pause signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) then pauses the playback process of the audiovisual data selected in S3 of Fig. 708a (S2), and retrieves Pause Message Text Data 20632b2c from Message Data Storage Area 20632b2 (Fig. 704) and displays the data on LCD 201 (Fig. 1) for a specified period of time (S3) When the playback process is paused in S2, the audio data included in the audiovisual data is refrained from being output from Speaker 216 (Fig. 1) and a still image composing the video data included in the audiovisual data is displayed on LCD 201 (Fig. 1).

[2937] Fig. 711a illustrates Audiovisual Resume Software 20632c3a stored in Audiovisual Playback Software Storage

Area 20632c (Fig. 703) which resumes the playback process of the audiovisual data selected in S3 of Fig. 708a from the point the audiovisual data is paused in S2 of Fig. 711. Referring to Fig. 711a, the audiovisual resume signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) then resumes the playback process of the audiovisual data selected in S3 of Fig. 708a (S2) from the point it is paused in S2 of Fig. 711, and retrieves Resume Message Text Data 20632b2c1 from Message Data Storage Area 20632b2 (Fig. 704) and displays the data on LCD 201 (Fig. 1) for a specified period of time (S3) When the playback process is resumed in S2, the audio data included in the audiovisual data is resumed to be output from Speaker 216 (Fig. 1) and the video data included in the audiovisual data is resumed to be displayed on LCD 201 (Fig. 1).

[2938] Fig. 712 illustrates Audiovisual Slow Replay Software 20632c4 stored in Audiovisual Playback Software Storage Area 20632c (Fig. 703) which implements the playback process of the audiovisual data selected in S3 of Fig. 708a in a slow motion. Referring to Fig. 712, the audiovisual slow replay signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig.

1) then initiates the playback process of the audiovisual data selected in S3 of Fig. 708a in a slow motion (S2), and retrieves Slow Replay Message Text Data 20632b2d from Message Data Storage Area 20632b2 (Fig. 704) and displays the data on LCD 201 (Fig. 1) for a specified period of time (S3).

[2939] Fig. 713 illustrates Audiovisual Fast-Forward Software 20632c5 stored in Audiovisual Playback Software Storage Area 20632c (Fig. 703) which fast-forwards the audiovisual data selected in S3 of Fig. 708a. Referring to Fig. 713, the audiovisual fast-forward signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) then fast-forwards the audiovisual data selected in S3 of Fig. 708a (S2), and retrieves Fast-Forward Message Text Data 20632b2e from Message Data Storage Area 20632b2 (Fig. 704) and displays the data on LCD 201 (Fig. 1) for a specified period of time (S3).

[2940] Fig. 714 illustrates Audiovisual Fast-Rewind Software 20632c6 stored in Audiovisual Playback Software Storage Area 20632c (Fig. 703) which fast-rewinds the audiovisual data selected in S3 of Fig. 708a. Referring to Fig. 714, the audiovisual fast-rewind signal is input by utilizing Input

Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) then fast-rewinds the audiovisual data selected in S3 of Fig. 708a (S2), and retrieves Fast-Rewind Message Text Data 20632b2f from Message Data Storage Area 20632b2 (Fig. 704) and displays the data on LCD 201 (Fig. 1) for a specified period of time (S3).

[2941] Fig. 715 illustrates Audiovisual Next Software 20632c7 stored in Audiovisual Playback Software Storage Area 20632c (Fig. 703) which initiates the playback process of the next audiovisual data stored in Audiovisual Data Storage Area 20632b1 (Fig. 705). Referring to Fig. 715, the audiovisual next signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) then initiates the playback process of the next audiovisual data of the audiovisual data selected in S3 of Fig. 708a both of which are stored in Audiovisual Data Storage Area 20632b1 (Fig. 705) (S2), and retrieves Next Message Text Data 20632b2g from Message Data Storage Area 20632b2 (Fig. 704) and displays the data on LCD 201 (Fig. 1) for a specified period of time (S3).

[2942] Fig. 716 illustrates Audiovisual Previous Software 20632c8 is a software program which initiates the playback process of the previous audiovisual data stored in Audiovisual

Data Storage Area 20632b1 (Fig. 705). Referring to Fig. 716, the audiovisual previous signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) then initiates the playback process of the previous audiovisual data of the audiovisual data selected in S3 of Fig. 708a both of which are stored in Audiovisual Data Storage Area 20632b1 (Fig. 705) (S2), and retrieves Previous Message Text Data 20632b2h from Message Data Storage Area 20632b2 (Fig. 704) and displays the data on LCD 201 (Fig. 1) for a specified period of time (S3).

[2943] As another embodiment, the audiovisual data stored in Audiovisual Data Storage Area 20632b1 (Fig. 705) may be stored in Host H (Fig. 429) and retrieved therefrom when the software programs described in Figs. 709 through 716 are executed. In this embodiment, the audio data is temporarily stored in RAM 206 (Fig. 1) and is erased from the portion which is playbacked.

[2944] *<<Audiovisual Playback Function -- Summary>>*

[2945] (1) A communication device comprising a microphone, a speaker, a display, an input device and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and an audiovi-

sual playback mode, a series of sound data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, an audio data is output from said speaker and a video data is output from said display when said audiovisual playback mode is implemented, and said audio data is refrained from being output from said speaker and a still image is output from said display when an audiovisual pause signal is input via said input device.

[2946] (2) The wireless communication device of Summary (1) wherein said audiovisual data is resumed to playback from the point said audiovisual data is paused when an audiovisual resume signal is input via said input device.

[2947] (2) An audiovisual playback software program installed in a communication device comprising a microphone, a speaker, a display, an input device and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and an audiovisual playback mode, a series of sound data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, an audio data is output from said speaker and a video data is output from said display under the control of

said audiovisual playback software program when said audiovisual playback mode is implemented, and said audio data is refrained from being output from said speaker and a still image is output from said display under the control of said audiovisual playback software program when an audiovisual pause signal is input via said input device.

[2948] *<<Audio Playback Function>>*

[2949] Figs. 717 through 731 illustrate the audio playback function which enables Communication Device 200 to playback audio data, such as jazz music, rock music, classic music, pops music, and any other types of audio data.

[2950] Fig. 717 illustrates the information stored in RAM 206 (Fig. 1). As described in Fig. 717, RAM 206 includes Audio Playback Information Storage Area 20633a of which the information stored therein are described in Fig. 718.

[2951] The data and software programs necessary to implement the present function are downloaded to Communication Device 200 from Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[2952] Fig. 718 illustrates the data and software programs stored in Audio Playback Information Storage Area 20633a (Fig. 717). As described in Fig. 718, Audio Playback Informa-

tion Storage Area 20633a includes Audio Playback Data Storage Area 20633b and Audio Playback Software Storage Area 20633c. Audio Playback Data Storage Area 20633b stores the data necessary to implement the present function, such as the ones described in Figs. 719 through 721. Audio Playback Software Storage Area 20633c stores the software programs necessary to implement the present function, such as the ones described in Fig. 722.

[2953] Fig. 719 illustrates the data stored in Audio Playback Data Storage Area 20633b (Fig. 718). As described in Fig. 719, Audio Playback Data Storage Area 20633b includes Audio Data Storage Area 20633b1 and Message Data Storage Area 20633b2. Audio Data Storage Area 20633b1 stores a plurality of audio data described in Fig. 720. Message Data Storage Area 20633b2 stores a plurality of message data described in Fig. 721.

[2954] Fig. 720 illustrates the audio data stored in Audio Data Storage Area 20633b1 (Fig. 719). As described in Fig. 720, Audio Data Storage Area 20633b1 stores a plurality of audio data wherein the audio data stored therein in the present example are: Audio Data 20633b1a, Audio Data 20633b1b, Audio Data 20633b1c, and Audio Data

20633b1d, all of which are primarily composed of video data and audio data. Audio Data 20633b1a is a jazz music, Audio Data 20633b1b is a rock music, Audio Data 20633b1c is a classic music, Audio Data 20633b1d is a pops music in the present embodiment. The data stored in Audio Data Storage Area 20633b1 may be the same or similar to the ones described in TV Data Storage Area 206f (Fig. 99) and/or Video Data Storage Area 20610c (Fig. 228). As another embodiment, Audio Data 20633b1d may be an audio data taken via CCD Unit 214 (Fig. 1) and Microphone 215 (Fig. 1).

[2955] Fig. 721 illustrates the data stored in Message Data Storage Area 20633b2 (Fig. 719). As described in Fig. 721, Message Data Storage Area 20633b2 includes Start Message Text Data 20633b2a, Stop Message Text Data 20633b2b, Pause Message Text Data 20633b2c, Resume Message Text Data 20633b2c1, Slow Replay Message Text Data 20633b2d, Forward Message Text Data 20633b2e, Rewind Message Text Data 20633b2f, Next Message Text Data 20633b2g, and Previous Message Text Data 20633b2h. Start Message Text Data 20633b2a is a text data which is displayed on LCD 201 (Fig. 1) and which indicates that the playback of an audio data is initiated.

Stop Message Text Data 20633b2b is a text data which is displayed on LCD 201 and which indicates that the playback process of an audio data is stopped. Pause Message Text Data 20633b2c is a text data which is displayed on LCD 201 and which indicates that the playback process of an audio data is paused. Resume Message Text Data 20633b2c1 is a text data which is displayed on LCD 201 and which indicates that the playback process of an audio data is resumed from the point it is paused. Slow Replay Message Text Data 20633b2d is a text data which is displayed on LCD 201 and which indicates that the playback process of an audio data is implemented in a slow motion. Fast-Forward Message Text Data 20633b2e is a text data which is displayed on LCD 201 and which indicates that an audio data is fast-forwarded. Fast-Rewind Message Text Data 20633b2f is a text data which is displayed on LCD 201 and which indicates that an audio data is fast-rewinded. Next Message Text Data 20633b2g is a text data which is displayed on LCD 201 and which indicates that the playback process of the next audio data stored in Audio Data Storage Area 20633b1 (Fig. 720) is initiated. Previous Message Text Data 20633b2h is a text data which is displayed on LCD 201 and which indicates that

the playback process of the previous audio data stored in Audio Data Storage Area 20633b1 (Fig. 720) is initiated.

[2956] Fig. 722 illustrates the software programs stored in Audio Playback Software Storage Area 20633c (Fig. 718). As described in Fig. 722, Audio Playback Software Storage Area 20633c includes Audio Start Software 20633c1, Audio Stop Software 20633c2, Audio Pause Software 20633c3, Audio Resume Software 20633c3a, Audio Slow Replay Software 20633c4, Audio Fast-Forward Software 20633c5, Audio Fast-Rewind Software 20633c6, Audio Next Software 20633c7, and Audio Previous Software 20633c8. Audio Start Software 20633c1 is a software program which initiates the playback process of an audio data. Audio Stop Software 20633c2 is a software program which stops the playback process of an audio data. Audio Pause Software 20633c3 is a software program which pauses the playback process of an audio data. Audio Resume Software 20633c3a is a software program which resumes the playback process of the audio data from the point it is paused by Audio Pause Software 20633c3. Audio Slow Replay Software 20633c4 is a software program which implements the playback process of an audio data in a slow motion. Audio Fast-Forward Software 20633c5 is a soft-

ware program which fast-forwards an audio data. Audio Fast-Rewind Software 20633c6 is a software program which fast-rewinds an audio data. Audio Next Software 20633c7 is a software program which initiates the play-back process of the next audio data stored in Audio Data Storage Area 20633b1 (Fig. 720). Audio Previous Software 20633c8 is a software program which initiates the play-back process of the previous audio data stored in Audio Data Storage Area 20633b1.

[2957] Fig. 723 illustrates the messages displayed on LCD 201 (Fig. 1). As described in Fig. 723, eight types of messages are displayed on LCD 201, i.e., 'Start', 'Stop', 'Pause', 'Re-sume', 'Slow Reply', 'Fast-Forward', 'Fast-Rewind', 'Next', and 'Previous'. 'Start' is Start Message Text Data 20633b2a, 'Stop' is Stop Message Text Data 20633b2b, 'Pause' is Pause Message Text Data 20633b2c, 'Resume' is Resume Message Text Data 20633b2c1, 'Slow Reply' is Slow Replay Message Text Data 20633b2d, 'Fast-Forward' is Fast-Forward Message Text Data 20633b2e, 'Fast-Rewind' is Fast-Rewind Message Text Data 20633b2f, 'Next' is Next Message Text Data 20633b2g, 'Previous' is Previous Message Text Data 20633b2h described in Fig. 721 hereinbefore.

[2958] Fig. 723a illustrates Audio Selecting Software 20633c9 stored in Audio Playback Software Storage Area 20633c (Fig. 718) in preparation of executing the software programs described in Figs. 724 through 731. Referring to Fig. 723a, CPU 211 (Fig. 1) retrieves the identifications of the audio data stored in Audio Data Storage Area 20633b1 (Fig. 720) (S1). CPU 211 then displays a list of the identifications on LCD 201 (Fig. 1) (S2). A particular audio data is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S3).

[2959] Figs. 724 through 731 illustrates the software programs stored in Audio Playback Software Storage Area 20633c (Fig. 718). As described in each drawing figure hereinafter, eight types of input signals can be input by utilizing Input Device 210 (Fig. 1) or via voice recognition system, i.e., the audio playback signal, the audio stop signal, the audio pause signal, the audio resume signal, the audio slow replay signal, the audio fast-forward signal, the audio fast-rewind signal, the audio next signal, and the audio previous signal. The audio playback signal indicates to initiate the playback process of the audio data selected in S3 of Fig. 723a. The audio stop signal indicates to stop the playback process of the audio data selected in S3 of

Fig. 723a. The audio pause signal indicates to pause the playback process of the audio data selected in S3 of Fig. 723a. The audio resume signal indicates to resume the playback process of the audio data selected in S3 of Fig. 723a from the point the audio data is paused. The audio slow replay signal indicates to implement the playback process of the audio data selected in S3 of Fig. 723a in a slow motion. The audio fast-forward signal indicates to fast-forward the audio data selected in S3 of Fig. 723a. The audio fast-rewind signal indicates to fast-rewind the audio data selected in S3 of Fig. 723a. The audio next signal indicates to initiate the playback process of the next audio data of the audio data selected in S3 of Fig. 723a both of which are stored in Audio Data Storage Area 20633b1 (Fig. 720). The audio previous signal indicates to initiate the playback process of the previous audio data of the audio data selected in S3 of Fig. 723a both of which are stored in Audio Data Storage Area 20633b1 Fig. 724 illustrates Audio Start Software 20633c1 stored in Audio Playback Software Storage Area 20633c (Fig. 718) which initiates the playback process of the audio data selected in S3 of Fig. 723a. Referring to Fig. 724, the audio playback signal is input by utilizing Input Device 210 (Fig. 1) or via

voice recognition system (S1). CPU 211 (Fig. 1) then initiates the playback process (i.e., outputs the audio data from Speaker 216 (Fig. 1)) of the audio data selected in S3 of Fig. 723a (S2), and retrieves Start Message Text Data 20633b2a from Message Data Storage Area 20633b2 (Fig. 719) and displays the data on LCD 201 (Fig. 1) for a specified period of time (S3).

[2960] Fig. 725 illustrates Audio Stop Software 20633c2 stored in Audio Playback Software Storage Area 20633c (Fig. 718) which stops the playback process of the audio data selected in S3 of Fig. 723a. Referring to Fig. 725, the audio stop signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) then stops the playback process of the audio data selected in S3 of Fig. 723a (S2), and retrieves Stop Message Text Data 20633b2b from Message Data Storage Area 20633b2 (Fig. 719) and displays the data on LCD 201 (Fig. 1) for a specified period of time (S3).

[2961] Fig. 726 illustrates Audio Pause Software 20633c3 stored in Audio Playback Software Storage Area 20633c (Fig. 718) which pauses the playback process of the audio data selected in S3 of Fig. 723a. Referring to Fig. 726, the audio pause signal is input by utilizing Input Device 210 (Fig. 1)

or via voice recognition system (S1). CPU 211 (Fig. 1) then pauses the playback process of the audio data selected in S3 of Fig. 723a (S2), and retrieves Pause Message Text Data 20633b2c from Message Data Storage Area 20633b2 (Fig. 719) and displays the data on LCD 201 (Fig. 1) for a specified period of time (S3) When the playback process is paused in S2, the audio data included in the audio data is refrained from being output from Speaker 216 (Fig. 1).

[2962] Fig. 726a illustrates Audio Resume Software 20633c3a stored in Audio Playback Software Storage Area 20633c (Fig. 718) which resumes the playback process of the audio data selected in S3 of Fig. 723a from the point the audiovisual data is paused in S2 of Fig. 726. Referring to Fig. 726a, the audio resume signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) then resumes the playback process of the audio data selected in S3 of Fig. 723a from the point the audiovisual data is paused in S2 of Fig. 726(S2), and retrieves Resume Message Text Data 20633b2c1 from Message Data Storage Area 20633b2 (Fig. 719) and displays the data on LCD 201 (Fig. 1) for a specified period of time (S3).

[2963] Fig. 727 illustrates Audio Slow Replay Software 20633c4

stored in Audio Playback Software Storage Area 20633c (Fig. 718) which implements the playback process of the audio data selected in S3 of Fig. 723a in a slow motion. Referring to Fig. 727, the audio slow replay signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) then initiates the playback process of the audio data selected in S3 of Fig. 723a in a slow motion (S2), and retrieves Slow Replay Message Text Data 20633b2d from Message Data Storage Area 20633b2 (Fig. 719) and displays the data on LCD 201 (Fig. 1) for a specified period of time (S3).

[2964] Fig. 728 illustrates Audio Fast-Forward Software 20633c5 stored in Audio Playback Software Storage Area 20633c (Fig. 718) which fast-forwards the audio data selected in S3 of Fig. 723a. Referring to Fig. 728, the audio fast-forward signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) then fast-forwards the audio data selected in S3 of Fig. 723a (S2), and retrieves Fast-Forward Message Text Data 20633b2e from Message Data Storage Area 20633b2 (Fig. 719) and displays the data on LCD 201 (Fig. 1) for a specified period of time (S3).

[2965] Fig. 729 illustrates Audio Fast-Rewind Software 20633c6

stored in Audio Playback Software Storage Area 20633c (Fig. 718) which fast-rewinds the audio data selected in S3 of Fig. 723a. Referring to Fig. 729, the audio fast-rewind signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) then fast-rewinds the audio data selected in S3 of Fig. 723a (S2), and retrieves Fast-Rewind Message Text Data 20633b2f from Message Data Storage Area 20633b2 (Fig. 719) and displays the data on LCD 201 (Fig. 1) for a specified period of time (S3).

[2966] Fig. 730 illustrates Audio Next Software 20633c7 stored in Audio Playback Software Storage Area 20633c (Fig. 718) which initiates the playback process of the next audio data stored in Audio Data Storage Area 20633b1 (Fig. 720). Referring to Fig. 730, the audio next signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) then initiates the playback process of the next audio data of the audio data selected in S3 of Fig. 723a both of which are stored in Audio Data Storage Area 20633b1 (Fig. 720) (S2), and retrieves Next Message Text Data 20633b2g from Message Data Storage Area 20633b2 (Fig. 719) and displays the data on LCD 201 (Fig. 1) for a specified period of time (S3).

[2967] Fig. 731 illustrates Audio Previous Software 20633c8 is a software program which initiates the playback process of the previous audio data stored in Audio Data Storage Area 20633b1 (Fig. 720). Referring to Fig. 731, the audio previous signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) then initiates the playback process of the previous audio data of the audio data selected in S3 of Fig. 723a both of which are stored in Audio Data Storage Area 20633b1 (Fig. 720) (S2), and retrieves Previous Message Text Data 20633b2h from Message Data Storage Area 20633b2 (Fig. 719) and displays the data on LCD 201 (Fig. 1) for a specified period of time (S3).

[2968] As another embodiment, the audio data stored in Audio Data Storage Area 20633b1 (Fig. 720) may be stored in Host H (Fig. 429) and retrieved therefrom when the software programs described in Figs. 724 through 731 are executed. In this embodiment, the audio data is temporarily stored in RAM 206 (Fig. 1) and is erased from the portion which is playbacked.

[2969] *<<Audio Playback Function -- Summary>>*

[2970] (1) A communication device comprising a microphone, a speaker, a display, an input device and a multiple mode

implementor, wherein said multiple mode implementor implements a voice communication mode and an audio playback mode, a series of sound data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, an audio data is output from said speaker when said audio playback mode is implemented, and said audio data is refrained from being output from said speaker when an audio pause signal is input via said input device.

[2971] (2) The wireless communication device of Summary (1) wherein said audio data is resumed to playback from the point said audio data is paused when an audio resume signal is input via said input device.

[2972] (3) An audio playback software program installed in a communication device comprising a microphone, a speaker, a display, an input device and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and an audio playback mode, a series of sound data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, an audio data is output from said speaker and a video data is output from said display under the control of

said audio playback software program when said audio playback mode is implemented, and said audio data is refrained from being output from said speaker when an audio pause signal is input via said input device.

[2973] *<<Ticket Purchasing Function>>*

[2974] Figs. 732 through 753 illustrate the ticket purchasing function which enables Communication Device 200 to purchase tickets in a wirless fashion. Here, the tickets capable to be purchased by utilizing the present function are, for example, the tickets for boarding airplanes and trains, and the ticktets for entering movie theaters and museums. The present function is also applicable to purchasing coupons and any type of security which is in electronic format.

[2975] Fig. 732 illustrates the information stored in RAM 206 (Fig. 1) of Communication Deivce 200. As described in Fig. 732, RAM 206 includes Ticket Purchasing Information Storage Area 20634a of which the data and software programs stored therein are described in Fig. 733.

[2976] The data and software programs stored in Ticket Purchasing Information Storage Area 20634a (Fig. 732) are downloaded from Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[2977] Fig. 733 illustrates the storage areas included in Ticket Purchasing Information Storage Area 20634a (Fig. 732). As described in Fig. 733, Ticket Purchasing Information Storage Area 20634a includes Ticket Purchasing Data Storage Area 20634b and Ticket Purchasing Software Storage Area 20634c. Ticket Purchasing Data Storage Area 20634b stores the data necessary to implement the present function on the side of Communication Device 200, such as the ones described in Figs. 734 and 735. Ticket Purchasing Software Storage Area 20634c stores the software programs necessary to implement the present function on the side of Communication Device 200, such as the ones described in Fig. 736.

[2978] Fig. 734 illustrates the storage areas included in Ticket Purchasing Data Storage Area 20634b (Fig. 733). As described in Fig. 734, Ticket Purchasing Data Storage Area 20634b includes Credit Card Data Storage Area 20634b1, Purchased Ticket Data Storage Area 20634b2, Device List Data Storage Area 20634b3, and Ticket List Data Storage Area 20634b4. Credit Card Data Storage Area 20634b1 stores the credit card data of the user of Communication Device 200 of which the data stored therein are further described in Fig. 735. Purchased Ticket Data Storage Area

20634b2 stores the data regarding the ticket purchased by utilizing the present function. Device List Data Storage Area 20634b3 stores the data regarding the devices to which the data stored in Purchased Ticket Data Storage Area 20634b2 can be sent. Ticket List Data Storage Area 20634b4 stores the ticket list data sent by Host H (Fig. 429) which is displayed on LCD 201 (Fig. 1).

[2979] Fig. 735 illustrates the data stored in Credit Card Data Storage Area 20634b1 (Fig. 734). As described in Fig. 735, Credit Card Data Storage Area 20634b1 stores the credit card data of the user of Communication Device 200, i.e., the name of the user, the credit card number, the expiration date, the billing address, and the phone number.

[2980] Fig. 736 illustrates the software programs stored in Ticket Purchasing Software Storage Area 20634c (Fig. 733). As described in Fig. 736, Ticket Purchasing Software Storage Area 20634c stores Credit Card Data Input Software 20634c1, Ticket Data Displaying Software 20634c2, Ticket Data Selecting Software 20634c3, Purchase Data Sending Software 20634c4, Purchased Ticket Data Processing Software 20634c5, and Purchased Ticket Data Transferring Software 20634c6. Credit Card Data Input Software 20634c1 is a software program described in Fig. 745.

Ticket Data Displaying Software 20634c2 is a software program described in Fig. 743. Ticket Data Selecting Software 20634c3 is a software program described in Fig. 744. Purchase Data Sending Software 20634c4 is a software program described in Fig. 746. Purchased Ticket Data Processing Software 20634c5 is a software program described in Fig. 752. Purchased Ticket Data Transferring Software 20634c6 is a software program described in Fig. 753.

[2981] Fig. 737 illustrates the information stored in Host Information Storage Area H00a (Fig. 429) of Host H. As described in Fig. 737, Host Information Storage Area H00a includes Ticket Purchasing Information Storage Area H34a of which the data and software programs stored therein are described in Fig. 738.

[2982] Fig. 738 illustrates the data and software programs stored in Ticket Purchasing Information Storage Area H34a (Fig. 738). As described in Fig. 738, Ticket Purchasing Information Storage Area H34a includes Ticket Purchasing Data Storage Area H34b and Ticket Purchasing Software Storage Area H34c. Ticket Purchasing Data Storage Area H34b stores the data necessary to implement the present function on the side of Host H (Fig. 429), such as the ones de-

scribed in Figs. 739 through 741. Ticket Purchasing Software Storage Area H34c stores the software programs necessary to implement the present function on the side of Host H, such as the ones described in Figs. 742.

[2983] Fig. 739 illustrates the data stored in Ticket Purchasing Data Storage Area H34b (Fig. 738). As described in Fig. 739, Ticket Purchasing Data Storage Area H34b includes Credit Card Data Storage Area H34b1, Ticket Data Storage Area H34b2, and Purchase Data Storage Area H34b3. Credit Card Data Storage Area H34b1 stores each user's credit card data as described in Fig. 740. Ticket Data Storage Area H34b2 stores the data regarding the tickets which can be purchased by utilizing the present function of which the data stored therein are described in Fig. 741. Purchase Data Storage Area H34b3 stores the purchase data sent from Communication Device 200 as described in Fig. 746.

[2984] Fig. 740 illustrates the data stored in Credit Card Data Storage Area H34b1 (Fig. 739). As described in Fig. 740, Credit Card Data Storage Area H34b1 comprises four columns, i.e., User ID, Credit Card Data, Purchase Confirmation Number, and Ticket ID. The column User ID stores the identification of each user of Communication Device

200. The column Credit Card Data stores the credit card data of the user of the corresponding User ID. Each credit card data stored in this column has the same data structure as the one described in Fig. 735. The column Purchase Confirmation Number stores the purchase confirmation number produced in the manner described in Fig. 750. The column Ticket ID stores the identification of the ticket(s) purchased by utilizing the present function. In the example described in Fig. 740, Credit Card Data Storage Area H34b1 stores the 'User ID' H34UID1 of which the corresponding 'Credit Card Data', 'Purchase Confirmation Number', and 'Ticket ID' is H34CCD1, H34TPCN1, and H34TID1, respectively; the 'User ID' H34UID2 of which the corresponding 'Credit Card Data' is H34CCD2; the 'User ID' H34UID3 of which the corresponding 'Credit Card Data' is H34CCD3; and the 'User ID' H34UID4 of which the corresponding 'Credit Card Data' is H34CCD4.

[2985] Fig. 741 illustrates the data stored in Ticket Data Storage Area H34b2 (Fig. 739). As described in Fig. 741, Ticket Data Storage Area H34b2 comprises four columns, i.e., 'Ticket ID', 'Ticket Title', 'Ticket Description', and 'Price Data'. 'Ticket ID' is the identification of each ticket capable to be purchased by utilizing the present function. 'Ticket

Title' is the title of the ticket of the corresponding 'Ticket ID'. 'Ticket Description' is the description of the ticket of the corresponding 'Ticket ID'. 'Price Data' is the data regarding the price of the ticket of the corresponding 'Ticket ID'. In the example described in Fig. 741, Ticket Data Storage Area H34b2 stores 'Ticket ID' H34TID1 of which 'Ticket Title', 'Ticket Description', and 'Price Data' is H34TT1, H34TD1, and H34PD1, respectively; 'Ticket ID' H34TID2 of which 'Ticket Title', 'Ticket Description', and 'Price Data' is H34TT2, H34TD2, and H34PD2, respectively; 'Ticket ID' H34TID3 of which 'Ticket Title', 'Ticket Description', and 'Price Data' is H34TT3, H34TD3, and H34PD3, respectively; and'Ticket ID' H34TID4 of which 'Ticket Title', 'Ticket Description', and 'Price Data' is H34TT4, H34TD4, and H34PD4, respectively.

[2986] Fig. 742 illustrates the software programs stored in Ticket Purchasing Software Storage Area H34c (Fig. 738). As described in Fig. 742, Ticket Purchasing Software Storage Area H34c stores Credit Card Authentication Software H34c1, Ticket Data Displaying Software H34c2, and Purchase Data Processing Software H34c3. Credit Card Authentication Software H34c1 is a software program described in Fig. 749. Ticket Data Displaying Software H34c2

is a software program described in Fig. 743. Purchase Data Processing Software H34c3 is a software program described in Fig. 750.

[2987] Fig. 743 illustrates both Ticket Data Displaying Software 20634c2 stored in Ticket Purchasing Software Storage Area 20634c (Fig. 736) of Communication Device 200 and Ticket Data Displaying Software H34c2 stored in Ticket Purchasing Software Storage Area H34c (Fig. 742) of Host H (Fig. 429). Referring to Fig. 743, CPU 211 (Fig. 1) of Communication Device 200 sends a request for a ticket list data to Host H (S1). In response to the request, Host H retrieves the data stored in the columns Ticket Title and Ticket Description from Ticket Data Storage Area H34b2 (Fig. 741) (S2). In the example described in Fig. 741, 'Ticket Title' H34TT1 and its 'Ticket Description' H34TD1, 'Ticket Title' H34TT2 and its 'Ticket Description' H34TD2, 'Ticket Title' H34TT3 and its 'Ticket Description' H34TD3, and 'Ticket Title' H34TT4 and its 'Ticket Description' H34TD4 are retrieved from Ticket Data Storage Area H34b2 and sent as the ticket list data to Communication Device 200. CPU 211, upon receiving the ticket list data from Host H, stores the data in Ticket List Data Storage Area 20634b4 (Fig. 734) and displays them on LCD 201

(Fig. 1) (S3).

[2988] Fig. 744 illustrates Ticket Data Selecting Software 20634c3 stored in Ticket Purchasing Software Storage Area 20634c (Fig. 736) of Communication Device 200. Referring to Fig. 744, a particular ticket data is selected from the ticket list data displayed on LCD (Fig. 1) by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) stores the ticket data selected in S1 in a specific storage area in Ticket Purchasing Data Storage Area 20634b (Fig. 734) (S2).

[2989] Fig. 745 illustrates Credit Card Data Input Software 20634c1 stored in Ticket Purchasing Software Storage Area 20634c (Fig. 736) of Communication Device 200. Referring to 745, CPU 211 (Fig. 1) displays the credit card data input screen on LCD 201 (Fig. 1) to input data regarding the credit card of the user of Communication Device 200 (S1). The credit card data described in Fig. 735 (i.e., Name, Credit Card Number, Expiration Date, Billing Address, and Phone Number) are input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2), and CPU 211 stores the credit card data to Credit Card Data Storage Area 20634b1 (Fig. 734) (S3). The data stored in Credit Card Data Storage Area 20634b1 is stored

permanently unless they are erased by the user of Communication Deivice 200 to utilize the data for the next purchase of tickets utlizing the present function.

[2990] Fig. 746 illustrates Purchase Data Sending Software 20634c4 stored in Ticket Purchasing Software Storage Area 20634c (Fig. 736) of Communication Device 200. Referring to 746, CPU 211 (Fig. 1) retrieves the selected ticket data (i.e., the ticket data selected in S1 of Fig. 744) (S1). CPU 211 then retrieves the credit card data from Credit Card Data Storage Area 20634b1 (Fig. 734) (S2). CPU 211 produces Purchase Data 20634PD, which is described in Fig. 747, and sends the data to Host H (S3).

[2991] Fig. 747 illustrates the data included in Purchase Data 20634PD produced in S3 of Fig. 746. As described in Fig. 747, Purchase Data 20634PD includes Selected Ticket Data 20634PD1 and Credit Card Data 20634PD2. Selected Ticket Data 20634PD1 is the data retrieved in S1 of Fig. 746, and Credit Card Data 20634PD2 is the data retrieved in S2 of Fig. 746.

[2992] Fig. 748 illustrates the software program stored in Ticket Purchasing Software Storage Area H34c (Fig. 742) of Host H (Fig. 429). Referring to Fig. 748, Host H receives Purchase Data 20634PD (Fig. 747) (S1) and stores the data in

Purchase Data Storage Area H34b3 (Fig. 739) (S2).

[2993] Fig. 749 illustrates Credit Card Authentication Software H34c1 stored in Ticket Purchasing Software Storage Area H34c (Fig. 742) of Host H (Fig. 429). Referring to Fig. 749, Host H retrieves Credit Card Data 20634PD2 from Purchase Data Storage Area H34b3 (Fig. 739) (S1). Host H then compares Credit Card Data 20634PD2 with the credit card data stored in Credit Card Data Storage Area H34b1 (Fig. 740) (S2). If Credit Card Data 20634PD2 matches with one of the credit card data stored in Credit Card Data Storage Area H34b1 (S3), Host H initiates the purchase process described in Fig. 750 (S4).

[2994] Fig. 750 illustrates Purchase Data Processing Software H34c3 stored in Ticket Purchasing Software Storage Area H34c (Fig. 742) of Host H (Fig. 429). Referring to Fig. 750, Host H retrieves Selected Ticket Data 20634PD1 from Purchase Data Storage Area H34b3 (Fig. 739) (S1), and initiates the purchase process by utilizing the data, such as retrieving the price data from Ticket Data Storage Area H34b2 (Fig. 741) and sending the bill to a credit card company (S2). Host H produces a purchase confirmation number (S3), and stores the data in Credit Card Data Storage Area H34b1 (Fig. 740) as well as the ticket ID ofSe-

lected Ticket Data 20634PD1 (S4). Host H retrieves the ticket ID of Selected Ticket Data 20634PD1 and the purchase confirmation number from Credit Card Data Storage Area H34b1 (S5), and produces Purchased Ticket Data H34PTD, which is sent to Communication Device 200 (S6). Assume that the user whose User ID is H34UID1 purchases a ticket of which Ticket Title is H34TT1 described in Fig. 740. After the purchase process described in S2 is completed, Host H produces a purchase confirmation number (i.e., H34TPCN1) (S3). Host H then stores the purchase confirmation number (i.e., H34TPCN1) in column Purchase Confirmation Number of Credit Card Data Storage Area H34b1 (Fig. 740), and further retrieves the corresponding Ticket ID (H34TID1) from Ticket Data Storage Area H34b2 (Fig. 741) which is stored in column Ticket ID of Credit Card Data Storage Area H34b1 (S4). Ticket ID H34TT1 and purchase confirmation number H34TPCN1 is retrieved from Credit Card Data Storage Area H34b1 (S5), and Purchased Ticket Data H34PTD is produced and sent to Communication Device 200 thereafter (S6).

[2995] Fig. 751 illustrates the data included in Purchased Ticket Data H34PTD described in S6 of Fig. 750. As described in Fig. 751, Purchased Ticket Data H34PTD includes Ticket

ID H34PTD1 and Purchase Confirmation Number H34PTD2. Ticket ID H34PTD1 and Purchase Confirmation Number H34PTD2 are the data stored in Credit Card Data Storage Area H34b1 (Fig. 740) in S4 of Fig. 750. In the example described in Fig. 740, Ticket ID H34TID1 constitutes Ticket ID H34PTD1 and Purchase Confirmation Number H34TPCN1 constitutes Purchase Confirmation Number H34PTD2.

[2996] Fig. 752 illustrates Purchased Ticket Data Processing Software 20634c5 stored in Ticket Purchasing Software Storage Area 20634c (Fig. 736) of Communication Device 200. Referring to Fig. 752, CPU 211 (Fig. 1) receives Purchased Ticket Data H34PTD (Fig. 751) from Host H (Fig. 429) (S1). CPU 211 then stores Purchased Ticket Data H34PTD to Purchased Ticket Data Storage Area 20634b2 (Fig. 734) (S2), and retrieves Ticket ID H34PTD1 and Purchase Confirmation Number H34PTD2 therefrom (S3), which are displayed on LCD 201 (Fig. 1) (S4).

[2997] Fig. 753 illustrates Purchased Ticket Data Transferring Software 20634c6 stored in Ticket Purchasing Software Storage Area 20634c (Fig. 736) of Communication Device 200 to send the purchased ticket data to another device. Referring to Fig. 753, CPU 211 (Fig. 1) retrieves a list of

devices capable to receive the purchased ticket data from Device List Data Storage Area 20634b3 (Fig. 734) (S1), which is displayed on LCD 201 (Fig. 1) (S2). A particular device is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S3). CPU 211 then retrieves Purchased Ticket Data H34PTD from Purchased Ticket Data Storage Area 20634b2 (Fig. 734) (S4), and sends the data to the device selected in S3. As another embodiment, Purchased Ticket Data H34PTD may be sent by e-mails.

[2998] For the avoidance of doubt, Purchased Ticket Data H34PTD (Fig. 751) does not necessarily include both Ticket ID H34PTD1 and Purchase Confirmation Number H34PTD2, i.e., the data may include only either Ticket ID H34PTD1 orPurchase Confirmation Number H34PTD2.

[2999] *<<Ticket Purchasing Function -- Summary>>*

[3000] (1) A ticket purchasing system comprising a communication device and a host computer, said wireless communication device comprises a microphone, a speaker, a display, an input device and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and a ticket purchasing mode, a series of audio data are input to and output from said microphone and said speaker respectively when said voice

communication mode is implemented, a list of ticket data is displayed on said display, a ticket data is selected by said input device, the selected ticket data is sent to said host computer, and said host computer sends a purchased ticked information to said communication device when said ticket purchasing mode is implemented.

[3001] (2) A communication device comprising a microphone, a speaker, a display, an input device and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and a ticket purchasing mode, a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, a list of ticket data is displayed on said display, a ticket data is selected by said input device, the selected ticket data is sent to a host computer, and said communication device receives a purchased ticket information from said host when said ticket purchasing mode is implemented.

[3002] (3) A ticket purchasing software program installed in a communication device comprising a microphone, a speaker, a display, an input device and a multiple mode implementor, wherein said multiple mode implementor

implements a voice communication mode and a ticket purchasing mode, a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, a list of ticket data is displayed on said display under the control of said ticket purchasing software program, a ticket data is selected by said input device under the control of said ticket purchasing software program, the selected ticket data is sent to a host computer under the control of said ticket purchasing software program, and said communication device receives a purchased ticket information from said host under the control of said ticket purchasing software program when said ticket purchasing mode is implemented.

[3003] *<<Remote Data Erasing Function>>*

[3004] Figs. 754 through 774 illustrate the remote data erasing function which enables Host H (Fig. 429) to erase a portion or all data stored in RAM 206 (Fig. 1) of Communication Device 200.

[3005] Fig. 754 illustrates the information stored in RAM 206 (Fig. 1) of Communication Device 200. As described in the present drawing, RAM 206 includes Remote Data Erasing Information Storage Area 20635a of which the data and

software programs stored therein are described in Fig. 755.

[3006] The data and software programs stored in Remote Data Erasing Information Storage Area 20635a (Fig. 754) are downloaded from Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[3007] Fig. 755 illustrates the storage areas included in Remote Data Erasing Information Storage Area 20635a (Fig. 754). As described in the present drawing, Remote Data Erasing Information Storage Area 20635a includes Remote Data Erasing Data Storage Area 20635b and Remote Data Erasing Software Storage Area 20635c. Remote Data Erasing Data Storage Area 20635b stores the data necessary to implement the present function on the side of Communication Device 200, such as the ones described in Fig. 756. Remote Data Erasing Software Storage Area 20635c stores the software programs necessary to implement the present function on the side of Communication Device 200, such as the ones described in Figs. 763, 764, 769, 770, 772, and 773.

[3008] Fig. 756 illustrates the storage areas included in Remote Data Erasing Data Storage Area 20635b (Fig. 755). As described in the present drawing, Remote Data Erasing Data

Storage Area 20635b includes Storage Area Data Storage Area 20635b1 and To-Be-Erased Storage Area Data Storage Area 20635b2. Storage Area Data Storage Area 20635b1 stores the storage area data which represents the structure of the storage areas (i.e., the directory) including the identifications of the data (including software programs and other types of information) stored in each storage area (i.e., each directory) of RAM 206 (Fig. 1). To-Be-Erased Storage Area Data Storage Area 20635b2 stores the to-be-erased storage area data which represents the storage areas (i.e., the directories) to be erased by utilizing the present function.

[3009] Fig. 757 illustrates the storage areas included in Remote Data Erasing Software Storage Area 20635c (Fig. 755). As described in the present drawing, Remote Data Erasing Software Storage Area 20635c (Fig. 755) includes Storage Area Selecting Software 20635c1, To-Be-Erased Storage Area Data Sending Software 20635c2, and Storage Area Erasing Software 20635c3. Storage Area Selecting Software 20635c1 is a software program described in Fig. 763. To-Be-Erased Storage Area Data Sending Software 20635c2 is a software program described in Fig. 764. Storage Area Erasing Software 20635c3 is a software pro-

gram described in Fig. 769.

[3010] Fig. 758 illustrates the storage area included in Host Information Storage Area H00a of Host H (Fig. 429). As described in the present drawing, Host Information Storage Area H00a includes Remote Data Erasing Information Storage Area H35a of which the data and software program stored therein are described in Fig. 759.

[3011] Fig. 759 illustrates the storage areas included in Remote Data Erasing Information Storage Area H35a (Fig. 758). As described in the present drawing, Remote Data Erasing Information Storage Area H35a includes Remote Data Erasing Data Storage Area H35b and Remote Software Erasing Software Storage Area H35c. Remote Data Erasing Data Storage Area H35b stores the data necessary to implement the present function on the side of Host H (Fig. 429), such as the ones described in Figs. 760 and 761. Remote Software Erasing Software Storage Area H35c stores the software programs necessary to implement the present function on the side of Host H, such as the ones described in Fig. 762.

[3012] Fig. 760 illustrates the storage area included in Remote Data Erasing Data Storage Area H35b (Fig. 759). As described in the present drawing, Remote Data Erasing Data

Storage Area H35b includes To-Be-Erased Storage Area Data Storage Area H35b1 of which the data stored therein are described in Fig. 761.

[3013] Fig. 761 illustrates the data stored in To-Be-Erased Storage Area Data Storage Area H35b1 (Fig. 760). As described in the present drawing, To-Be-Erased Storage Area Data Storage Area H35b1 is comprised of two columns, i.e., 'User ID' and 'To-Be-Erased Storage Area Data'. Column 'User ID' stores the identifications of the users of Communication Device 200. Column 'To-Be-Erased Storage Area Data' stores the to-be-erased storage area data of Communication Device 200 of the corresponding 'User ID'. Here, the to-be-erased storage area data represents the storage areas (i.e., the directories) of Communication Device 200 to be erased by utilizing the present function. The default data stored in To-Be-Erased Storage Area Data Storage Area H35b1 is 'Null'. In the example described in the present drawing, the 'User ID' H35b1a of which the 'To-Be-Erased Storage Area Data' is 20635TBE1; the 'User ID' H35b1b of which the 'To-Be-Erased Storage Area Data' is 'Null'; and the 'User ID' H35b1c of which the 'To-Be-Erased Storage Area Data' is 'Null' are stored in To-Be-Erased Storage Area Data Stor-

age Area H35b1.

[3014] Fig. 762 illustrates the software programs stored in Remote Data Erasing Software Storage Area H35c (Fig. 755). As described in the present drawing, Remote Data Erasing Software Storage Area H35c stores To-Be-Erased Storage Area Data Receiving Software H35c1, Selected Storage Area Erasing Software H35c2, and Storage Area Selecting Software H35c3. To-Be-Erased Storage Area Data Receiving Software H35c1 is described in Fig. 766. Selected Storage Area Erasing Software H35c2 is described in Fig. 767. Storage Area Selecting Software H35c3 is described in Fig. 774.

[3015] Fig. 763 illustrates Storage Area Selecting Software 20635c1 stored in Remote Data Erasing Software Storage Area 20635c (Fig. 757) of Communication Device 200 which selects the storage areas to be erased by utilizing the present function. Referring to the present drawing, CPU 211 (Fig. 1) retrieves the storage area data which represents the structure of the storage areas (i.e., the directory) including the identifications of the data (including software programs and other types of information) stored in each storage area (i.e., each directory) of RAM 206 (Fig. 1) from Storage Area Data Storage Area 20635b1 (Fig.

756) (S1), and displays a list of the storage areas on LCD 201 (Fig. 1) (S2). A particular storage area to be erased by utilizing the present function is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S3). CPU 211 then stores the identifications of the storage areas selected in S2 as the to-be-erased storage area data to To-Be-Erased Storage Area Data Storage Area 20635b2 (Fig. 756) (S4).

[3016] Fig. 764 illustrates To-Be-Erased Storage Area Data Sending Software 20635c2 stored in Remote Data Erasing Software Storage Area 20635c (Fig. 757) which sends the to-be-erased storage area data to Host H (Fig. 429). Referring to the present drawing, CPU 211 (Fig. 1) retrieves the to-be-erased storage area data from To-Be-Erased Storage Area Data Storage Area 20635b2 (Fig. 756) (S1) and sends To-Be-Erased Storage Area Data 20635TBE to Host H of which the data included therein are described in Fig. 765 (S2).

[3017] Fig. 765 illustrates the data included in To-Be-Erased Storage Area Data 20635TBE described in S2 of Fig. 764. As described in the present drawing, To-Be-Erased Storage Area Data 20635TBE includes To-Be-Erased Storage Area Data 20635TBE1 and User ID 20635TBE2. To-

Be-Erased Storage Area Data 20635TBE1 is the data retrieved in S1 of Fig. 764. User ID 20635TBE2 is the identification of the user of Communication Device 200.

[3018] Fig. 766 illustrates To-Be-Erased Storage Area Data Receiving Software H35c1 stored in Remote Data Erasing Software Storage Area H35c (Fig. 762) of Host H (Fig. 429) which receives the to-be-erased storage area data sent from Communication Device 200. Referring to the present drawing, Host H receives To-Be-Erased Storage Area Data 20635TBE sent from Communication Device 200 (S1). Host H then retrieves To-Be-Erased Storage Area Data 20635TBE1 and User ID 20635TBE2 therefrom (S2), and stores To-Be-Erased Storage Area Data 20635TBE1 in To-Be-Erased Storage Area Data Storage Area H35b1 (Fig. 761) (S3). In the example described in Fig. 761, To-Be-Erased Storage Area Data 20635TBE1 is stored in column 'To-Be-Erased Storage Area Data' corresponding to the 'User ID' H35b1a.

[3019] Fig. 767 illustrates Selected Storage Area Erasing Software H35c2 stored in Remote Data Erasing Software Storage Area H35c (Fig. 762) of Host H (Fig. 429) which erases the selected storage areas of Communication Device 200. Referring to the present drawing, the input storage area

erasing signal which indicates to initiate the process to erase the storage areas of Communication Device 200 is input to Host H (S1). Next, the user ID is input to Host H to identify the identification of Communication Device 200 (the user ID in the present example is 'H35b1a' as described in Fig. 761) (S2). Host H retrieves To-Be-Erased Storage Area Data 20635TBE1 from To-Be-Erased Storage Area Data Storage Area H35b1 (Fig. 761) (S3) and sends to Communication Device 200 Storage Area Erasing Command H35SAEC which is described in Fig. 768 (S4).

[3020] Fig. 768 illustrates the data included in Storage Area Erasing Command H35SAEC (Fig. 767). As described in the present drawing, Storage Area Erasing Command H35SAEC includes Storage Area Erasing Instruction H35SAEC1 and To-Be-Erased Storage Area Data H35SAEC2 / User ID H35SAEC3. Storage Area Erasing Instruction H35SAEC1 is an instruction to erase the storage areas indicated in To-Be-Erased Storage Area Data H35SAEC2. To-Be-Erased Storage Area Data H35SAEC2 is the data indicating the storages areas erased by utilizing the present function. User ID H35SAEC3 is the identification of the user of Communication Device 200 to identify the device to which the present function is implemented.

[3021] Fig. 769 illustrates Storage Area Erasing Software 20635c3 stored in Remote Data Erasing Software Storage Area 20635c (Fig. 757) of Communication Device 200 which erases the selected storage areas of RAM 206 (Fig. 1). Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 receives Storage Area Erasing Command H35SAEC from Host H (Fig. 429) (S1), and retrieves Storage Area Erasing Instruction H35SAEC1 (Fig. 768) therefrom (S2). In response to Storage Area Erasing Instruction H35SAEC1, CPU 211 retrieves To-Be-Erased Storage Area Data H35SAEC2 (S3), and erases the storage areas of RAM 206 in accordance with To-Be-Erased Storage Area Data H35SAEC2 (S4).

[3022] *<<Remote Data Erasing Function -- Other Embodiments>>*

[3023] Fig. 770 illustrates another embodiment of Storage Area Erasing Software 20635c3 stored in Remote Data Erasing Software Storage Area 20635c (Fig. 757) of Communication Device 200 when the user of Communication Device 200 has not selected the storage areas to be erased. Assuming that the user has not gone through the process described in Fig. 763. The data, in this case, stored in column 'To-Be-Erased Storage Area Data' of To-Be-Erased Storage Area Data Storage Area H35b1 is 'Null' as de-

scribed in Fig. 761. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 receives Storage Area Erasing Command H35SAEC from Host H (Fig. 429) (S1), and retrieves Storage Area Erasing Instruction H35SAEC1 (Fig. 768) therefrom (S2). In response to Storage Area Erasing Instruction H35SAEC1, CPU 211 retrieves To-Be-Erased Storage Area Data H35SAEC2 (S3). If the data included in To-Be-Erased Storage Area Data H35SAEC2 is 'Null' (S4), CPU 211 erases all storage areas as well as the data, software programs, and all types of information stored therein included in RAM 206 (Fig. 1) (S5).

[3024] Figs. 771 and 772 illustrates another embodiment of the described in Figs. 768 and 769.

[3025] Fig. 771 illustrates another embodiment of Storage Area Erasing Command H35SAEC described in Fig. 768. As described in the present drawing, Storage Area Erasing Command H35SAEC includes Storage Area Erasing Instruction H35SAEC1 and User ID H35SAEC3 while To-Be-Erased Storage Area Data H35SAEC2 is excluded in this embodiment compared to the data illustrated in Fig. 768.

[3026] Fig. 772 illustrates another embodiment of Storage Area

Erasing Software 20635c3 described in Fig. 769 stored in Remote Data Erasing Software Storage Area 20635c (Fig. 757) of Communication Device 200 which erases the storage areas of RAM 206 (Fig. 1). Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 receives Storage Area Erasing Command H35SAEC from Host H (Fig. 429) (S1), and retrieves Storage Area Erasing Instruction H35SAEC1 (Fig. 771) therefrom (S2). In response to Storage Area Erasing Instruction H35SAEC1, CPU 211 retrieves the to-be-erased storage area data from To-Be-Erased Storage Area Data Storage Area 20635b2 (Fig. 756) of Communication Device 200 (S3), and erases the storage areas of RAM 206 in accordance with the data retrieved in S3 (S4).

[3027] Fig. 773 illustrates another embodiment of Storage Area Erasing Software 20635c3 described in Fig. 772 stored in Remote Data Erasing Software Storage Area 20635c (Fig. 757) of Communication Device 200 which erases the storage areas of RAM 206 (Fig. 1). Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 receives Storage Area Erasing Command H35SAEC from Host H (Fig. 429) (S1), and retrieves Storage Area Erasing Instruction H35SAEC1 (Fig. 771) therefrom (S2). In re-

sponse to Storage Area Erasing Instruction H35SAEC1, CPU 211 retrieves the to-be-erased storage area data from To-Be-Erased Storage Area Data Storage Area 20635b2 (Fig. 756) of Communication Device 200 (S3). If the data included in the to-be-erased storage area data is 'Null' (S4), CPU 211 erases all storage areas as well as the data, software programs, and all types of information stored therein included in RAM 206 (Fig. 1) (S5).

[3028] Fig. 774 illustrates Storage Area Selecting Software H35c3 (Fig. 762) of Host H (Fig. 429) which remotely erases the storage areas of RAM 206 (Fig. 1). Referring to the present drawing, Host H accesses RAM 206 of Communication Device 200 and retrieves the storage area data from Storage Area Data Storage Area 20635b1 (Fig. 756) (S1). A list of the storage areas of RAM 206 (Fig. 1) is displayed on the monitor of Host H (S2). The operator of Host H selects the storage areas to be erased (S3). The data selected in S3 is stored as the to-be-erased storage area data in To-Be-Erased Storage Area Data Storage Area H35b1 (S4). The description of Fig. 767 follows thereafter.

[3029] *<< Remote Data Erasing Function -- Summary>>*

[3030] (1) A remote data erasing system comprising a communication device and a host computer, said wireless commu-

nication device comprises a microphone, a speaker, a display, an input device, a storage means, and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and a remote data erasing mode, a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, said host computer sends an erasing command to said wireless communication device, said wireless communication device erases the data stored in said storage means upon receiving said erasing command.

[3031] (2) A communication device comprising a microphone, a speaker, a display, an input device, a storage means and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and a ticket purchasing mode, a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, said wireless communication device erases the data stored in said storage means upon receiving an erasing command.

[3032] (3) A remote data erasing software program installed in a communication device comprising a microphone, a

speaker, a display, an input device, a storage means and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and a ticket purchasing mode, a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, said wireless communication device erases the data stored in said storage means under the control of said remote data erasing software upon receiv-ing an erasing command.

[3033] *<< Business Card Function >>*

[3034] Figs. 775 through 783 llustrate the business card function which enbles Communication Device 200 ('Device A') to send the business card data to another Communication Device 200 ('Device B').

[3035] Fig. 775 llustrates the connection between Device A and Device B. As described in the present drawing, Device A and Device B are directly conntected in a wirless fashion. Both devices may send and receive wireless signals via Antenna 218 (Fig. 1) or LED 219 (Fig. 1).

[3036] Fig. 776 illustrates the information stored in RAM 206 (Fig. 1) of both Device A and Device B. As described in the present drawing, RAM 206 (Fig. 1) includes Business Card

Information Storage Area 20636a of which the data and the software programs stored therein are described in Fig. 777.

[3037] The data and software programs stored in Business Card Information Storage Area 20636a(Fig. 776) are down-loaded from Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[3038] Fig. 777 illustrates the storage areas included in Business Card Information Storage Area 20636a (Fig. 776). As described in the present drawing, Business Card Data Storage Area 20636b includes Business Card Data Storage Area 20636b and Business Card Software Storage Area 20636c. Business Card Data Storage Area 20636b stores the data necessary to implement the present function, such as the ones described in Figs. 778 through 780. Business Card Software Storage Area 20636c stores the software programs necessary to implement the present function, such as the ones described in Figs. 781.

[3039] Fig. 778 illustrates the storage areas included in Business Card Data Storage Area 20636b (Fig. 777). As described in the present drawing, Business Card Data Storage Area 20636b includes User's Business Card Data Storage Area 20636b1and Other Users' Business Card Data Storage

Area 20636b2. User's Business Card Data Storage Area 20636b1stores data as described in Fig. 779. Other Users' Business Card Data Storage Area 20636b2 stores data as described in Fig. 780.

[3040] Fig. 779 illustrates the data included in User's Business Card Data Storage Area 20636b1 (Fig. 778). As described in the present drawing, User's Business Card Data Storage Area 20636b1 includes 'Name', 'Title', 'Department', 'Phone Number', 'Fax Number', 'Email Address', and 'Office Address'. 'Name' is the name of the user of Communication Device 200. 'Title' is the title of the user of Communication Device 200 at work. 'Department' is the department or the devision for which the user of Communication Device 200 works. 'Phone Number' is the phone number of the user of Communication Device 200 at work. 'Fax Number' is the fax number of the user of Communication Device 200 at work. 'Email Address' is the email address of the user of Communication Device 200 at work. 'Office Address' is the street address of the office where the user of Communication Device 200 works.User's Business Card Data Storage Area 20636b1 of Device A stores 'Name', 'Title', 'Department', 'Phone Number', 'Fax Number', 'Email Address', and 'Office Address' of the user of Device A.

User's Business Card Data Storage Area 20636b1 of Device B stores 'Name', 'Title', 'Department', 'Phone Number', 'Fax Number', 'Email Address', and 'Office Address' of the user of Device B.

[3041] Fig. 780 illustrates the data stored in Other Users' Business Card Data Storage Area 20636b2(Fig. 778). As described in the present drawing, Other Users' Business Card Data Storage Area 20636b2 comprises two columns, i.e., 'User ID' and 'Business Card Data'.'User ID' is the identification of the user of Communication Device 200 which is utilized for identifying Communication Device 200. 'Business Card Data'is the data of which the data structure is as same as the one described in Fig. 779. In the example described in the present drawing, Other Users' Business Card Data Storage Area 20636b2 comprises 'User ID' 20636UI1 of which 'Business Card Data' is 20636CD1, 'User ID' 20636UI2 of which 'Business Card Data' is 20636CD2, 'User ID' 20636UI3 of which 'Business Card Data' is 20636CD3, and 'User ID' 20636UI4 of which 'Business Card Data' is 20636CD4.Each of 'Business Card Data' 20636CD1, 20636CD2, 20636CD3, and 20636CD4 includes 'Name', 'Title', 'Department', 'Phone Number', 'Fax Number', 'Email Address', and 'Office Address'. 'Name' is

the name of the user of Communication Device 200 in the manner described in Fig. 779. The data stored in Other Users' Business Card Data Storage Area 20636b2 of both Device A and Device B are not necessarily identical to each other. For example, Device A may store the data described in the present drawing, and Device B may store the following data: 'User ID' 20636UI5of which 'Business Card Data' is 20636CD5, 'User ID' 20636UI6 of which 'Business Card Data' is 20636CD6, 'User ID' 20636UI7 of which 'Business Card Data' is 20636CD7, and 'User ID' 20636UI8 of which 'Business Card Data' is 20636CD8.

[3042] Fig. 781 illustrates the software programs stored in Business Card Software Storage Area 20636c (Fig. 777). As described in the present drawing, Business Card Software Storage Area 20636c stores User Card Data Sending Software 20636c1 and Other User Card Data Receiving Software 20636c2. User Card Data Sending Software 20636c1is a software program described in Fig. 782. Other User Card Data Receiving Software 20636c2 is a software program described in Fig. 783.

[3043] Fig. 782 illustrates User Card Data Sending Software 20636c1 (Fig. 781) of Communication Device 200 (Device A in the present example). Referring to the present draw-

ing, CPU 211 (Fig. 1) of Device A retrieves theuser card data from User's Business Card Data Storage Area 20636b1 (Fig. 778) (S1). CPU 211 then connects to Device B in the manner described in Fig. 775, and sends Transferring User Card Data 20636TUCD which is described in Fig. 782a to Device B (S2).

[3044] Fig. 782a illustrates the data included in Transferring User Card Data 20636TUCD described in S2 of Fig. 782. As described in the present drawing, Transferring User Card Data 20636TUCD includes User ID 20636TUCD1 andUser Card Data 20636TUCD2.User ID 20636TUCD1 is the identification of the user of Communication Device 200 which is utilized for identifying Device A. User Card Data 20636TUCD2 is the data retrieved in S1 of Fig. 782.

[3045] Fig. 783 illustrates Other User Card Data Receiving Software 20636c2 (Fig. 781) of Device B. Referring to the present drawing, CPU 211 (Fig. 1) of Device B receives Transferring User Card Data 20636TUCD (Fig. 782a)sent by Device A described in S2 of Fig. 782 (S1). CPU 211 then retrieves User ID 20636TUCD1 and User Card Data 20636TUCD2 therefrom (S2), and stores these data in Other Users' Business Card Data Storage Area 20636b2 (Fig. 780) of Device B (S2).

[3046] *< < Business Card Function -- Summary >>*

[3047] (1) A business card system comprising a sending communication device and a receiving communication device, said sending communication device comprisesa microphone, a speaker, a display, an input device, a storage means,and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and a business card mode, said storage means stores a business card data, a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, said wireless communication devicesends in a wireless fashion said business card data to said receiving communication device when said business card mode is implemented.

[3048] (2) A communication device comprising a microphone, a speaker, a display, an input device, a storage meansand a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and a business card mode, said storage means stores a business card data, a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is imple-

mented, said wireless communication devicesends in a wireless fashion said business card data when said business card mode is implemented.

[3049] (3) A business card software program installed in acommunication device comprising a microphone, a speaker, a display, an input device, a storage meansand a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and a business card mode, said storage means stores a business card data, a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, said wireless communication devicesends in a wireless fashion said business card data under the control of said business card software when said business card mode is implemented.

[3050] *<< Game Vibrating Function >>*

[3051] Figs. 784 through 786 illustrate the game vibrating function which vibrates Communication Device 200 when a predetermined condition is met while Communication Device 200 is executing a video game software program.

[3052] Fig. 784 illustrates another embodiment of the software program described in Fig. 283 stored in Game Software

Storage Area 2061d (Fig. 141) to implement the shooting video game function (described inFigs. 270 through 283).When hit program is initiated as described in S4 of Fig. 282 (i.e., when User Controlled Object UCO (Fig. 270) is hit by CPU Fired Bullet CFB (Fig. 270)), CPU 211 (Fig. 1), first of all, activates Vibrator 217 (Fig. 1) (S1). Then CPU 211 displays an explosion image on LCD 201 (Fig. 1) by reading the three-dimensional data of CPU Fired Bullet CFB from 3D Object Data Storage Area 2061e (Fig. 141) and by 'pasting' the relevant textures thereto stored in Texture Data Storage Area 2061f (Fig. 141) (S2). Next, CPU 211 erases the image of User Controlled Object UCO from LCD 201 (S3), and also the explosion image (S4), and CPU 211 deactivates Vibrator 217 thereafter (S5).

[3053] Fig. 785 illustrates another embodiment of the software program described in Fig. 288 stored in Game Software Storage Area 2061d (Fig. 141) to implement the driving game function (Figs. 284 through 294). As described in the present drawing, CPU 211 (Fig. 1) performs the user controlled car process (S1), the CPU controlled car process for all CPU Controlled Car CCCs (Fig. 284) displayed on LCD 201 (Fig. 1) (S2), the street image process (S3), and the background image process (S4). The details of each

process are explained in Figs. 289 through 292 respectively. Further, CPU 211 performs the vibrator controlling process which is described in Fig. 786 (S5).

[3054] Fig. 786 illustrates the vibrator controlling process described in S5 of Fig. 785. Referring to the present drawing, CPU 211 (Fig. 1) periodically checks the position of User Controlled Car UCC (Fig. 284) (S1). If User Controlled Car UCC is off the street or driving on a street of a bad condition (S2), CPU 211 activates Vibrator 217 (Fig. 1) (S3). For purposes of implementing the present function to driving video game, CPU 211 periodically checks the position of User Controlled Car UCC. CPU 211 also periodically checks the street condition by retrieving the data regarding the street condition from Street Parameter Storage Area 2061g2 (Fig. 286).

[3055] *<< Game Vibrating Function -- Summary >>*

[3056] (1) A communication device comprising a microphone, a speaker, a display, an input device, a vibrator, and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and a video game mode, said vibrator is activated and vibrates when said communication device receives an incoming call and a series of sound data are input to and output from

said microphone and said speaker respectively when said voice communication mode is implemented, a video game software program is executed and one or more of video game objects are displayed on said display and said vibrator is activated under the control of said video game software program when a predetermined condition is met when said video game mode is implemented.

[3057] (2) A video game software program which is stored in a host computer and which is designed to be downloaded to a communication device wherein said video game software program displays one or more of video game objects on a display of said communication device and a vibrator of said communication device is activated under the control of said video game software program when a predetermined condition is met.

[3058] (3) A host computer which stores a video game software program which is designed to be downloaded to a communication device wherein said video game software program displays one or more of video game objects on a display of said communication device and a vibrator of said communication device is activated under the control of said video game software program when a predetermined condition is met.

[3059] (4) Said video game in summary (1), (2), or (3) is a shooting video game.

[3060] (5) Said video game in summary (1), (2), or (3) is a driving video game.

[3061] *<< Part-time Job Finding Function >>*

[3062] Figs. 787 through 801 illustrates the part-timer finding function which enables the user of Communication Device 200 to find a part-time job in a convenient manner by utilizing Communication Device 200.

[3063] Fig. 787 illustrates the storage area included in Host H (Fig. 429). As described in the present drawing, Host H includes Part-timer Finding Information Storage Area H38a of which the data and software programs stored therein are described in Fig. 788.

[3064] Fig. 788 illustrates the storage areas included in Part-timer Finding Information Storage Area H38a (Fig. 787). As described in the present drawing, Part-timer Finding Information Storage Area H38aincludesPart-timer Finding Data Storage Area H38b and Part-timer Finding Software Storage Area H38c. Part-timer Finding Data Storage Area H38b stores the data necessary to implement the present function on the side of Host H (Fig. 429), such as the ones described in Figs. 789 through 791. Part-timer Finding

Software Storage Area H38c stores the software programs necessary to implement the present function on the side of Host H, such as the ones described in Figs. 792.

[3065] Fig. 789 illustrates the storage areas included in Part-timer Finding Data Storage Area H38b(Fig. 788). As described in the present drawing, Part-timer Finding Data Storage Area H38b includes Part-timer Data Storage Area H38b1, Job Request Data Storage Area H38b2, Search Result Data Storage Area H38b3, Notice Data Storage Area H38b4, and Response Data Storage Area H38b5. Part-timer Data Storage Area H38b1 stores data described in Fig. 790. Job Request Data Storage Area H38b2stores data described in Fig. 791. Search Result Data Storage Area H38b3 stores the result of the search performed in S2 of Fig. 793. Notice Data Storage Area H38b4 stores the notice data sent to the user of Communication Device 200 as described in S4 of Fig. 794. Response Data Storage Area H38b5 stores the response data sent by Communication Device 200 as described in S2 of Fig. 801.

[3066] Fig. 790 illustrates the data stored in Part-timer Data Storage Area H38b1 (Fig. 789). As described in the present drawing, Part-timer Data Storage Area H38b1 comprises five columns, i.e., 'Part-timer ID', 'Available

Working Time', 'Available Worker Place', 'Mobile Phone #', and 'Email Address'. 'Part-timer ID' is the identification of the users of Communication Device 200 seeking for a part-time job. 'Available Working Time'is the available working time (or hours) of the user of Communication Device 200 of the corresponding 'Part-timer ID'. 'Available Worker Place', is the available working place (or geographical area) of the user of Communication Device 200 of the corresponding 'Part-timer ID'. 'Mobile Phone #' is the phone number of the user of Communication Device 200 of the corresponding 'Part-timer ID'. 'Email Address' is the email address of the user of Communication Device 200 of the corresponding 'Part-timer ID'. In the example described in the present drawing, the following data are stored in Part-timer Data Storage Area H38b1: 'Part-timer ID' H38b1PI1 of which 'Available Working Time', 'Available Worker Place', 'Mobile Phone #', and 'Email Address' are H38b1AWT1, H38b1AWP1, H38b1MP1, and H38b1EA1, respectively; 'Part-timer ID' H38b1PI2 of which 'Available Working Time', 'Available Worker Place', 'Mobile Phone #', and 'Email Address' are H38b1AWT2, H38b1AWP2, H38b1MP2, and H38b1EA2, respectively;'Part-timer ID' H38b1PI3 of which 'Available Working Time', 'Available

Worker Place', 'Mobile Phone #', and 'Email Address' are H38b1AWT3, H38b1AWP3, H38b1MP3, and H38b1EA3, respectively; 'Part-timer ID' H38b1PI4 of which 'Available Working Time', 'Available Worker Place', 'Mobile Phone #', and 'Email Address' are H38b1AWT4, H38b1AWP4, H38b1MP4, and H38b1EA4, respectively; 'Part-timer ID' H38b1PI5 of which 'Available Working Time', 'Available Worker Place', 'Mobile Phone #', and 'Email Address' are H38b1AWT5, H38b1AWP5, H38b1MP5, and H38b1EA5, respectively; 'Part-timer ID'H38b1PI6 of which 'Available Working Time', 'Available Worker Place', 'Mobile Phone #', and 'Email Address' are H38b1AWT6, H38b1AWP6, H38b1MP6, and H38b1EA6, respectively; and 'Part-timer ID' H38b1PI7 of which 'Available Working Time', 'Available Worker Place', 'Mobile Phone #', and 'Email Address' are H38b1AWT7, H38b1AWP7, H38b1MP7, and H38b1EA7, respectively.

[3067] Fig. 791 illustrates the data stored in Job Request Data Storage Area H38b2 (Fig. 789). As described in the present drawing, Job Request Data Storage Area H38b2 comprises two columns, i.e., 'Requested Working Time' and 'Requested Working Place'. 'Requested Working Time' is the working time (or hours) for which the potential hirer

seeks the potential part-timer to work (e.g., from 12:00 noon till 4:00 p.m.). 'Requested Working Place' is the working place (or the geographical area) where the potential hirer seeks the potential part-timer to work. In the example described in the present drawing, 'Requested Working Time' is H38b2RWT1, and 'Requested Working Place' is H38b2RWP1.

[3068] Fig. 792 illustrates the software programs stored in Part-timer Finding Software Storage Area H38c (Fig. 788). As described in the present drawing, Part-timer Finding Software Storage Area H38c stores Matched Part-timer Finding Software H38c1 and Notice Data Sending Software H38c2. Matched Part-timer Finding Software H38c1is a software program described in Fig. 793. Notice Data Sending Software H38c2 is a software program described in Fig. 794.

[3069] Fig. 793 illustrates Matched Part-timer Finding Software H38c1(Fig. 792) which is utilized to find the potential part-timer which matches with the condition set by the potiential hirer. Referring to the present drawing, Host H (Fig. 429), first of all, retrieves the request data which describes the condition set by the potential hirerfrom Job Request Data Storage Area H38b2 (Fig. 791) (S1). Host H

retrieves 'Requested Working Time' H38b2RWT1 and 'Requested Working Place' H38b2RWP1and compares these data with the ones stored in 'Available Working Time' and 'Available Worker Place' stored in Part-timer Data Storage Area H38b1(Fig. 790), respectively (S2). Host H stores the search result data which represents the search result of the search described in S2 in Search Result Data Storage Area H38b3 (Fig. 789) (S3).

[3070] Fig. 794 illustrates Notice Data Sending Software H38c2(Fig. 792) which is utilized to send a notice data to notify the user of Communication Device 200 who is included in the search result data described in S3 of Fig. 793 indicating that he/she is a candidate to a part-time job. Referring to the present drawing, Host H (Fig. 429) retrieves Search Result Data from Search Result Data Storage Area H38b3 (Fig. 789) (S1). Next, Host H retrieves the email address of the user from Part-timer Data Storage Area H38b1 (Fig. 789) (S2). A notice data indicating that he/she is an candidate of a part-time job is retrieved from Notice Data Storage Area H38b4 f(Fig. 789) (S3), and the notice data is sent to the email address retrieved in S2 (S4).

[3071] Fig. 795 illustrates the storage area included in RAM 206

(Fig. 1) of Communication Device 200 owned by the user described in Fig. 794. As described in the present drawing, RAM 206 includes Part-timer Finding Information Storage Area 20638a of which the data and software programs stored therein are described in Fig. 796.

[3072] The data and software programs stored in Part-timer Finding Information Storage Area 20638a(Fig. 795) are downloaded from Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[3073] Fig. 796 illustrates the storage areas included in Part-timer Finding Information Storage Area 20638a f(Fig. 795). As described in the present drawing, Part-timer Finding Information Storage Area 20638a includes Part-timer Finding Data Storage Area 20638b and Part-timer Finding Software Storage Area 20638c. Part-timer Finding Data Storage Area 20638b stores the data necessary to implement the present function on the side of Communication Device 200, such as the ones described in Fig. 797 through 798. Part-timer Finding Software Storage Area 20638c stores the software programs necessary to implement the present function on the side of Communication Device 200, such as the ones described in Fig. 799.

[3074] Fig. 797 illustrates the storage areas included in Part-

timer Finding Data Storage Area 20638b(Fig. 796). As described in the present drawing, Part-timer Finding Data Storage Area 20638b includes Part-timer Data Storage Area 20638b1, Notice Data Storage Area 20638b4, and Response Data Storage Area 20638b5. Part-timer Data Storage Area 20638b1 is the storage area described in Fig. 798. Notice Data Storage Area 20638b4 is the storage area to store the notice data sent from Host H (Fig. 429) as described in S4 of Fig. 794. Response Data Storage Area 20638b5 is the storage area to store the response data sent to Host H as described in S2 of Fig. 801.

[3075] Fig. 798 illustrates the data stored in Part-timer Data Storage Area 20638b1 (Fig. 797). As described in the present drawing, Part-timer Data Storage Area 20638b1 comprises five columns, i.e., 'Part-timer ID', 'Available Working Time', 'Available Worker Place', 'Mobile Phone #', and 'Email Address'. 'Part-timer ID' is the identification of the users of Communication Device 200 (i.e., the user described in Fig. 794). 'Available Working Time' is the available working time (or hours) of the user. 'Available Worker Place', is the available working place (or geographical area) of the user. 'Mobile Phone #' is the phone number of the user. 'Email Address' is the email address of the user.

In the example described in the present drawing, 'Part-timer ID' 20638b1PI1 of which 'Available Working Time', 'Available Worker Place', 'Mobile Phone #', and 'Email Address' are 20638b1AWT1, 20638b1AWP1, 20638b1MP1, and 20638b1EA1, respectively, are stored in Part-timer Data Storage Area 20638b1. In the present example, 'Part-timer ID' 20638b1PI1 is identical to 'Part-timer ID' H38b1PI1 stored in Part-timer Data Storage Area H38b1 (Fig. 790) of Host H (Fig. 429). Therefore, 'Available Working Time' 20638b1AWT1, 'Available Worker Place' 20638b1AWP1, 'Mobile Phone #' 20638b1MP1, and 'Email Address' 20638b1EA1 are identical to 'Available Working Time' H38b1AWT1, 'Available Worker Place' H38b1AWP1, 'Mobile Phone #' H38b1MP1, and 'Email Address' H38b1EA1, respectively.

[3076] Fig. 799 illustrates the software programs stored in Part-timer Finding Software Storage Area 20638c (Fig. 796). As described in the present drawing, Part-timer Finding Software Storage Area 20638c stores Response Data Input Software 20638c1 and Response Data Sending Software 20638c2. Response Data Input Software 20638c1 is the software program described in Fig. 800. Response Data Sending Software 20638c2 is the software program de-

scribed in Fig. 801.

[3077] Fig. 800 illustrates Response Data Input Software 20638c1 stored in Part-timer Finding Software Storage Area 20638c (Fig. 799) which produces the response data. Referring to the present drawing, CPU 211 (Fig. 1) displays a response data input screen to which the user of Communication Device 200 (i.e., the user described in Fig. 794) inputs the response data (S1). The user inputs the response data by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2), and the response data is stored in Response Data Storage Area 20638b5 (Fig. 797) (S3). The response data represents the answer (e.g., 'Yes, I will take the job' or 'No, I will not take the job) to the notice data sent from Host H (Fig. 429) as described in S4 of Fig. 794.

[3078] Fig. 801 illustrates Response Data Sending Software 20638c2 stored in Part-timer Finding Software Storage Area 20638c (Fig. 799) which sends to Host H (Fig. 429) the response data produced in S2 of Fig. 800. As described in the present drawing, CPU 211 (Fig. 1) retrieves the response data from Response Data Storage Area 20638b5 (Fig. 797) (S1), which is sent to Host H (S2). Host H receives the response data thereafter, which is stored in

Response Data Storage Area H38b5 (Fig. 789).

[3079] *<< Part-time Job Finding Function -- Summary >>*

[3080] (1) A host computer comprising a part-timer data storage area wherein said part-timer data storage area stores a plurality of part-time data, said host computer searches said part-timer data storage area for the part-timer data which matches with a certain condition, and said host computer sends a notice based on said part-timer data which matches said certain condition.

[3081] (2) A part-time worker finding system comprising a host computer and a communication device, wherein said host computer comprises a part-timer data storage area, said part-timer data storage area stores a plurality of part-time data, said host computer searches said part-timer data storage area for the part-timer data which matches a certain condition, said host computer sends a notice based on said part-timer data which matches with said certain condition, said communication device receives said notice, said communication device is input a response data, and said communication device sends said response data to said host computer.

[3082] *<< Parking Lot Finding Function >>*

[3083] Figs. 802 through 832 illustrates the parking lot finding function which enables Communication Device 200 to display the closestparking lot with vacant spaces on LCD 201 (Fig. 1) with the best route thereto.

[3084] Fig. 802 illustrates the connection between Host H (Fig. 429) and a plurality of parking lots. As described in the present drawing, Host H is connected to Parking Lot Computer PLC39a, Parking Lot Computer PLC39b, Parking Lot Computer PLC39c via Network NT (e.g., the Internet). Parking Lot Computer PLC39a is a computer which monitors the vacancy of Parking Lot PL39a. Parking Lot Computer PLC39b is a computer which monitors the vacancy of Parking Lot PL39b. Parking Lot Computer PLC39c is a computer which monitors the vacancy of Parking Lot PL39c. Parking Lot PL39a, Parking Lot PL39b, and Parking Lot PL39c are parking lots and each of which includes a plurality of parking spaces for parking automobiles.

[3085] Fig. 803 illustrates the storage area included in Parking Lot Computer PLC39a (Fig. 802). As described in the present drawing, Parking Lot Computer PLC39a includes Parking Lot Information Storage Area PLC39aof which the data and the software programs stored therein are described in are described in Fig. 804. Primarily, Parking Lot

Computer PLC39b (Fig. 802) and Parking Lot Computer PLC39c (Fig. 802) store the same data and software programs as the ones stored in Parking Lot Computer PLC39a (Fig. 802).

[3086] Fig. 804 illustrates the storage areas included in Parking Lot Information Storage Area PLC39a (Fig. 803). As described in the present drawing, Parking Lot Information Storage Area PLC39a includes Parking Lot Data Storage Area PLC39band Parking Lot Software Storage Area PLC39c. Parking Lot Data Storage Area PLC39bstores the data necessary to implement the present function on the side of Parking Lot Computer PLC39a (Fig. 802), such as the ones described in Fig. 805. Parking Lot Software Storage Area PLC39c stores the software programs necessary to implement the present function on the side of Parking Lot Computer PLC39a, such as the one described in Fig. 806.

[3087] Fig. 805 illustrates the data stored in Parking Lot Data Storage Area PLC39b (Fig. 804). As described in the present drawing, Parking Lot Data Storage Area PLC39b includes five types of data, i.e., 'Parking Lot ID', 'Total Spaces', 'Vacancy Data', 'Street Address', and 'Location Data'. 'Parking Lot ID' represents the identification of

Parking Lot PL39a. 'Total Spaces' represents the total parking spaces included in Parking Lot PL39a. 'Vacancy Data' represents the data representing the number of vacant parking spaces included in Parking Lot PL39a. 'Street Address' represents the street address of Parking Lot PL39a. 'Location Data' represents the geographic location of Parking Lot PL39a. In the present example, Parking Lot Data Storage Area PLC39b stores 'Parking Lot ID' PL39a, 'Total Spaces' PL39b1TS1, 'Vacancy Data' PL39b1VD1, 'Street Address' PL39b1SA1, and 'Location Data' PL39b1LD1.

[3088] Fig. 806 illustrates the software program stored in Parking Lot Software Storage Area PLC39c(Fig. 804). As described in the present drawing, Parking Lot Software Storage Area PLC39c stores Parking Lot Data Sending Software PLC39c1 which is described in Fig. 819.

[3089] Fig. 807 illustrates the storage area included in Host Information Storage Area H00a (Fig. 429) of Host H (Fig. 429). As described in the present drawing, Host Information Storage Area H00a includes Parking Lot Finding Information Storage Area H39a of which the data and the software programs stored therein are described in Fig. 808.

[3090] Fig. 808 illustrates the storage areas included in Parking

Lot Finding Information Storage Area H39a(Fig. 807) of Host H (Fig. 429). As described in the present drawing, Parking Lot Finding Information Storage Area H39a includes Parking Lot Finding Data Storage Area H39b and Parking Lot Finding Software Storage Area H39c. Parking Lot Finding Data Storage Area H39b stores the data necessary to implement the present function on the side of Host H, such as the ones described in Figs. 809 through 811. Parking Lot Finding Software Storage Area H39cstores the software programs necessary to implement the present function on the side of Host H, such as the ones described in Figs. 812.

[3091] Fig. 809 illustrates the storage areas included in Parking Lot Finding Data Storage Area H39b (Fig. 808). As described in the present drawing, Parking Lot Finding Data Storage Area H39b includes Parking Lot Data Storage Area H39b1, Map Data Storage Area H39b2, Selected Parking Lot Data Storage Area H39b3, and Best Route Data Storage Area H39b4. Parking Lot Data Storage Area H39b1 stores the data described in Fig. 811. Map Data Storage Area H39b2 stores the map data including the surrounding area of Parking Lot PL39a (Fig. 802), Parking Lot PL39b (Fig. 802), and Parking Lot PL39c (Fig. 802). Se-

lected Parking Lot Data Storage Area H39b3 stores the data described in Fig. 818. Best Route Data Storage Area H39b4 stores the data representing the best route from the current geographical location of Communication Device 200 to the selected parking lot of which the details are described in Fig. 824.

[3092] Fig. 810 illustrates the data stored in Selected Parking Lot Data Storage Area 20639b3(Fig. 809). As described in the present drawing, Selected Parking Lot Data Storage Area 20639b3stores the identification of the parking lot selected by utilizing the present function.

[3093] Fig. 811 illustrates the data stored in Parking Lot Data Storage Area H39b1 (Fig. 809). As described in the present drawing, Parking Lot Data Storage Area H39b1 includes five columns, i.e., 'Parking Lot ID', 'Total Spaces', 'Vacancy Data', 'Street Address', and 'Location Data'. 'Parking Lot ID' represents the identifications of the parking lots. 'Total Spaces' represents the total number of the parking spaces included in each parking lot. 'Vacancy Data' represents the number of the vacant parking spaces included in each parking lot. 'Street Address' is the street address of each parking lot. 'Location Data' represents the geographic location of each parking lot. In the present ex-

ample described in the present drawing, Parking Lot Data Storage Area H39b1stores the following data: 'Parking Lot ID' PL39a of which 'Total Spaces', 'Vacancy Data', 'Street Address', and 'Location Data' are PL39b1TS1, PL39b1VD1, PL39b1SA1, PL39b1LD1, respectively; 'Parking Lot ID' PL39b of which 'Total Spaces', 'Vacancy Data', 'Street Address', and 'Location Data' are PL39b1TS2, PL39b1VD2, PL39b1SA2, PL39b1LD2, respectively; and 'Parking Lot ID' PL39c of which 'Total Spaces', 'Vacancy Data', 'Street Address', and 'Location Data' are PL39b1TS3, PL39b1VD3, PL39b1SA3, PL39b1LD3, respectively.

[3094] Fig. 812 illustrates the software programs stored in Parking Lot Finding Software Storage Area H39c (Fig. 804). As described in the present drawing, Parking Lot Finding Software Storage Area H39c stores Parking Lot Data Updating Software H39c1, Parking Lot Data Sending Software H39c2, Parking Lot Selecting Software H39c3, and Selected Parking Lot Data Sending Software H39c4. Parking Lot Data Updating Software H39c1is the software program described in Fig. 820. Parking Lot Data Sending Software H39c2 is the software program described in Fig. 821. Parking Lot Selecting Software H39c3 is the software program described in Fig. 826. Selected Parking Lot Data

Sending Software H39c4 is the software program described in Fig. 827.

[3095] Fig. 813 illustrates the storage area included in RAM 206 (Fig. 1). As described in the present drawing, RAM 206 includes Parking Lot Finding Information Storage Area 20639a of which the data and the software programs stored therein are described in Fig. 814.

[3096] The data and software programs stored Parking Lot Finding Information Storage Area 20639a (Fig. 813) are downloaded from Host H (Fig. 429 and/or 802) in the manner described in Figs. 401 through 407.

[3097] Fig. 814 illustrates the storage areas included in Parking Lot Finding Information Storage Area 20639a (Fig. 813). As described in the present drawing, Parking Lot Finding Information Storage Area 20639a includes Parking Lot Finding Data Storage Area 20639b and Parking Lot Finding Software Storage Area 20639c. Parking Lot Finding Data Storage Area 20639b stores the data necessary to implement the present function on the side of Communication Device 200, such as the ones described in Figs. 815 and 816. Parking Lot Finding Software Storage Area 20639c stores the software programs necessary to implement the present function on the side of Communication

Device 200, such as the ones described in Fig. 817.

[3098] Fig. 815 illustrates the storage areas included in Parking Lot Finding Data Storage Area 20639b (Fig. 814). As described in the present drawing, Parking Lot Finding Data Storage Area 20639b includes Parking Lot Data Storage Area 20639b1, Map Data Storage Area 20639b2, Selected Parking Lot Data Storage Area 20639b3, and Best Route Data Storage Area 20639b4. Parking Lot Data Storage Area 20639b1 stores the data described in Fig. 816. Map Data Storage Area 20639b2 stores the map data of each and every location in the U.S. Selected Parking Lot Data Storage Area 20639b3 stores the data described in Fig. 818. Best Route Data Storage Area 20639b4stores the data calculated in S4 of Fig. 824 representing the best route from the current geographical location of Communication Device 200 to the selected parking lot.

[3099] Fig. 816 illustrates the data stored in Parking Lot Finding Data Storage Area 20639b(Fig.815). As described in the present drawing, Parking Lot Finding Data Storage Area 20639b includes five columns, i.e., 'Parking Lot ID', 'Total Spaces', 'Vacancy Data', 'Street Address', and 'Location Data'. 'Parking Lot ID' represents the identifications of the parking lots. 'Total Spaces' represents the total number of

the parking spaces included in each parking lot. 'Vacancy Data' represents the number of the vacant parking spaces included in each parking lot. 'Street Address' is the street address of each parking lot. 'Location Data' represents the geographic location of each parking lot. In the present example described in the present drawing, Parking Lot Data Storage Area H39b1 stores the following data: 'Parking Lot ID' PL39a of which 'Total Spaces', 'Vacancy Data', 'Street Address', and 'Location Data' are PL39b1TS1, PL39b1VD1, PL39b1SA1, PL39b1LD1, respectively; 'Parking Lot ID' PL39b of which 'Total Spaces', 'Vacancy Data', 'Street Address', and 'Location Data' are PL39b1TS2, PL39b1VD2, PL39b1SA2, PL39b1LD2, respectively; and 'Parking Lot ID' PL39c of which 'Total Spaces', 'Vacancy Data', 'Street Address', and 'Location Data' are PL39b1TS3, PL39b1VD3, PL39b1SA3, PL39b1LD3, respectively.The data stored in Parking Lot Finding Data Storage Area 20639b are not necessarily identical to the ones stored in Parking Lot Data Storage Area H39b1 (Fig. 811).

[3100] Fig. 817 illustrates the software programs stored in Parking Lot Finding Software Storage Area 20639c f(Fig. 814). As described in the present drawing, Parking Lot Finding Software Storage Area 20639c stores Parking Lot Data Re-

ceiving Software 20639c1, Parking Lot Selecting Software 20639c2, Selected Parking Lot Displaying Software 20639c3, and Selected Parking Lot Data Receiving Software 20639c4. Parking Lot Data Receiving Software 20639c1 is the software program described in Fig. 823. Parking Lot Selecting Software 20639c2is the software program described in Fig. 824. Selected Parking Lot Displaying Software 20639c3 is the software program described in Fig. 825. Selected Parking Lot Data Receiving Software 20639c4 is the software program described in Fig. 829.

[3101] Fig. 818 illustrates the data stored in Selected Parking Lot Data Storage Area 20639b3 (Fig. 815). As described in the present drawing, Selected Parking Lot Data Storage Area 20639b3 stores the identification of the parking lot selected by utilizing the present function.

[3102] Fig. 819 illustrates Parking Lot Data Sending Software PLC39c1 stored in Parking Lot Software Storage Area PLC39c (Fig. 806) of Parking Lot Computer PLC39a (Fig. 802). As described in the present drawing, Parking Lot Computer PLC39a retrieves the parking lot data (i.e., 'Parking Lot ID' PL39a, 'Total Spaces' PL39b1TS1, 'Vacancy Data' PL39b1VD1, 'Street Address' PL39b1SA1, and 'Loca-

tion Data' PL39b1LD1) from Parking Lot Data Storage Area PLC39b (Fig. 805) (S1). The parking lot data is sent to Host H (Figs. 429 and/or 802) thereafter (S2). The sequence of S1 and S2 is executed periodically by all parking lot computers (i.e., Parking Lot Computer PLC39a, Parking Lot Computer PLC39b, and Parking Lot Computer PLC39c).

[3103] Fig. 820 illustrates Parking Lot Data Updating Software H39c1 stored in Parking Lot Finding Software Storage Area H39c(Fig. 812) of Host H (Fig. 429 and/or 802). As described in the present drawing, Host H receives the parking lot data sent in the manner described in S2 of Fig. 819 (S1). Host H retrieves the parking lot data therefrom (S2), and updates Parking Lot Data Storage Area H39b1 (Fig. 811) (S3).

[3104] Fig. 821 illustrates Parking Lot Data Sending Software H39c2 stored in Parking Lot Finding Software Storage Area H39c (Fig. 812) of Host H (Fig. 429 and/or 802). As described in the present drawing, Host H retrieves the parking lot data from Parking Lot Data Storage Area H39b1 (Fig. 811) (S1). Next, Host H retrieves the map data from Map Data Storage Area H39b2 (Fig. 809) (S2). Host H produces Parking Lot & Map Data 20639PLMDfrom these data

and sends to Communication Device 200 Parking Lot & Map Data 20639PLMD which is described in Fig. 822 (S3).

[3105] Fig. 822 illustrates the data included in Parking Lot & Map Data 20639PLMD described in S3 of Fig. 821. As described in the present drawing, Parking Lot & Map Data 20639PLMD includes Parking Lot Data 20639PLMD1 and Map Data 20639PLMD2. Parking Lot Data 20639PLMD1 is the data retrieved in S1 of Fig. 821, and Map Data 20639PLMD2 is the data retrieved in S2 of Fig. 821.

[3106] Fig. 823 illustrates Parking Lot Data Receiving Software 20639c1 stored in Parking Lot Finding Software Storage Area 20639c (Fig. 817) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) receives Parking Lot & Map Data 20639PLMD (Fig. 822) from Host H (Fig. 429 and/or 802) (S1). CPU 211 next retrieves Parking Lot Data 20639PLMD1 (Fig. 822) and stores the data in Parking Lot Data Storage Area 20639b1 (Fig. 816) (S2). CPU 211 then retrieves Map Data 20639PLMD2 (Fig. 822) and stores the data in Map Data Storage Area 20639b2 (Fig. 815) (S3).

[3107] Fig. 824 illustrates Parking Lot Selecting Software 20639c2 stored in Parking Lot Finding Software Storage Area 20639c (Fig. 817) of Communication Device 200. As

described in the present drawing, CPU 211 (Fig. 1) calculates the current geographical location by utilizing the method so-called 'GPS' described hereinbefore (S1), and searches for the closest parking lot which has vacant parking space by scanning the data stored in Parking Lot Data Storage Area 20639b1(Fig. 816) (S2). CPU 211 selects the closest parking lot (S3), and calculates the best route data which represents the best route from the current geographical location to the parking lot selected in S3 (S4). CPU 211 stores the identification of the parking lot selected in S3 as the selected parking lot data in Selected Parking Lot Data Storage Area 20639b3 (Fig. 818) (S5). CPU 211 further storesthe best route data in Best Route Data Storage Area 20639b4 (Fig. 815) (S6).

[3108] Fig. 825 illustrates Selected Parking Lot Displaying Software 20639c3 stored in Parking Lot Finding Software Storage Area 20639c (Fig. 817) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) retrieves themap data from Map Data Storage Area 20639b2 (Fig. 815) (S1), and displays the map data on LCD 201 (Fig. 1) (S2). Next, CPU 211 retrieves the selected parking lot data from Selected Parking Lot Data Storage Area 20639b3 (Fig. 818), and displays a symbol (image

data) on the map data where the selected parking lot is located (S4). CPU 211 then retrieves theparking lot data from Parking Lot Data Storage Area 20639b1 (Fig. 816) (S5), and displays the data on LCD 201 (S6). Assuming that the selected parking lot (the parking lot selected in S3 of Fig. 824) is Parking Lot PL39a, CPU 211 retrieves from Parking Lot Data Storage Area H39b1 (Fig. 811) and displays on LCD 201 the following data: 'Parking Lot ID' PL39a, 'Total Spaces' PL39b1TS1, 'Vacancy Data' PL39b1VD1, 'Street Address' PL39b1SA1, and 'Location Data' PL39b1LD1. CPU 211 further retrieves thebest route data from Best Route Data Storage Area 20639b4 (Fig. 815) (S7), and displays the data on LCD 201 (S8). The best route data may be displayed with a red line from the current geographical location of Communication Device 200 to the selected parking lot.

[3109] *<< Parking Lot Finding Function -- Other Embodiments >>*

[3110] Figs. 826 through 830 illustrate another embodiment of the present function.

[3111] Fig. 826 illustrates both Parking Lot Selecting Software 20639c2 stored in Parking Lot Finding Software Storage Area 20639c (Fig. 817) of Communication Device 200 and Parking Lot Selecting Software H39c3 stored in Parking Lot

Finding Software Storage Area H39c(Fig. 812) of Host H (Fig. 429 and/or 802). Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 calculates the current geographical location by utilizingthe method so-called 'GPS' described hereinbefore, and sends the current geographical location data (S1), which is received by Host H (S2). Host H searches for the closest parking lot which has vacant parking space by scanning the data stored in Parking Lot Data Storage Area H39b1 (Fig. 811)(S3). Host H selects the closest parking lot (S4), and calculates the best route data which represents the best route from the current geographical location to the parking lot selected in S4 (S5). Host H stores the identification of the parking lot selected in S3 as the selected parking lot data in Selected Parking Lot Data Storage Area 20639b3 (Fig. 810) (S6). Host H further storesthe best route data in Best Route Data Storage Area H39b4 (Fig. 809) (S7).

[3112] Fig. 827 illustrates Selected Parking Lot Data Sending Software H39c4 stored in Parking Lot Finding Software Storage Area H39c (Fig. 812) of Host H (Fig. 429 and/or 802). Referring to the present drawing, Host H retrieves theselected parking lot data from Selected Parking Lot-

Data Storage Area H39b3 (Fig. 810) (S1). Host H retrieves themap data from Map Data Storage Area H39b2(Fig. 809) (S2). Host H further retrieves thebest route data from Best Route Data Storage Area H39b4 (Fig. 809) (S3). Host H then produces and sends to Communication Device 200 Selected Parking Lot & Map Data 20639SPLMD of which the data stored therein are described in Fig. 828 (S4).

[3113] Fig. 828 illustrates the data stored in Selected Parking Lot & Map Data 20639SPLMDdescribed in S4 of Fig. 827. As described in the present drawing, Selected Parking Lot & Map Data 20639SPLMD includes Selected Parking Lot Data 20639SPLMD1, Map Data 20639SPLMD2, and Best Route Data 20639SPLMD3. Selected Parking Lot Data 20639SPLMD1 is the data retrieved in S1 of Fig. 827, Map Data 20639SPLMD2 is the data retrieved in S2 of Fig. 827, and Best Route Data 20639SPLMD3 is the data retrieved in S3 of Fig. 827.

[3114] Fig. 829 illustrates Selected Parking Lot Data Receiving Software 20639c4 stored in Parking Lot Finding Software Storage Area 20639c (Fig. 817) of Communication Device 200. Referring to the present drawing, CPU 211 (Fig. 1) receives Selected Parking Lot & Map Data 20639SPLMD (Fig. 828) from Host H (Fig. 429 and/or 802) (S1). CPU

211 retrieves Selected Parking Lot Data 20639SPLMD1 therefrom and stores the data in Selected Parking Lot Data Storage Area 20639b3 (Fig. 810) (S2). CPU 211 then retrieves Map Data 20639PLMD2 from Selected Parking Lot & Map Data 20639SPLMD(Fig. 828) and stores the data in Map Data Storage Area 20639b2 (Fig. 815) (S3). CPU 211 further retrieves the best route data 20639SPLMD3 from Selected Parking Lot & Map Data 20639SPLMD and stores the data in Best Route Data Storage Area 20639b4 (Fig. 815) (S4).

[3115] Fig. 830 illustrates Selected Parking Lot Displaying Software 20639c3 stored in Parking Lot Finding Software Storage Area 20639c (Fig. 817) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) retrieves themap data from Map Data Storage Area 20639b2 (Fig. 815) (S1), and displays the map data on LCD 201 (Fig. 1) (S2). Next, CPU 211 retrieves the selected parking lot data from Selected Parking Lot Data Storage Area 20639b3 (Fig. 818) (S3), and displays a symbol (image data) on the map data where the selected parking lot is located (S4). CPU 211 then retrieves theparking lotdata from Parking Lot Data Storage Area 20639b1 (Fig. 816) (S5), and displays the data on the map data (S6). As-

suming that the selected parking lot (the parking lot selected in S3 of Fig. 824) is Parking Lot PL39a, CPU 211 retrieves from Parking Lot Data Storage Area H39b1 (Fig. 811) and displays on LCD 201 the following data: 'Parking Lot ID' PL39a, 'Total Spaces' PL39b1TS1, 'Vacancy Data' PL39b1VD1, 'Street Address' PL39b1SA1, and 'Location Data' PL39b1LD1. CPU 211 further retrieves thebest route data from Best Route Data Storage Area 20639b4(Fig. 815) (S7), and displays the data on LCD 201 (S8). The best route data may be displayed with a red line from the current geographical location of Communication Device 200 to the selected parking lot.

[3116] Fig. 831 illustrates another embodiment of the sequence described in Fig. 824. Communication Device 200 receives the row GPS data via Antenna 218 (Fig. 1) and CPU 211 (Fig. 1) of Communication Device 200 sends the data to Host H (Fig. 429 and/or 802) at which the current geographical location is calculated, and the result of the calculation is sent to Communication Device 200 (S1). CPU 211 of Communication Device 200 searches for the closest parking lot, based on the data received in S1 which represents the current geographical location, which has vacant parking space by scanning the data stored in Park-

ing Lot Data Storage Area 20639b1 (Fig. 816) (S2). CPU 211 selects the closest parking lot (S3), and calculates the best route data which represents the best route from the current geographical location to the parking lot selected in S3 (S4). CPU 211 stores the identification of the parking lot selected in S3 as the selected parking lot data in Selected Parking Lot Data Storage Area 20639b3 (Fig. 818) (S5). CPU 211 further storesthe best route data inBest Route Data Storage Area 20639b4 (Fig. 815) (S6).

[3117] Fig. 832 illustrates another embodiment of the connection between Host H (Fig. 429 and/or 802) and a plurality of parking lots. As described in the present drawing, Host H is connected to Parking Lot Computer PLC39a via Network NT (e.g., the Internet). Referring to the present drawing, Parking Lot Computer PLC39a monitors the vacancy of all parking lots, i.e., Parking Lot PL39a, Parking Lot PL39b, and Parking Lot PL39c.

[3118] *<< Parking Lot Finding Function -- Summary >>*

[3119] (1) A parking lot finding system comprising a host computer and a communication device wherein said host computer stores a parking lot data representing the number of the vacancy spaces in a plurality of parking lots, the current geographical location of said communication de-

vice is calculated, a parking lot with vacant space closest to said current geographical location is selected from said plurality of parking lots, a route from said current geographical location to said parking lot is calculated, and a map data with the location of said parking lot and said route indicated on said map is displayed on a display of said communication device.

[3120] (2) A communication device comprising a microphone, a speaker, a display, an input device and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and a parking lot finding mode, a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, a map data is displayed on a display of said communication device together with a firstimage data which represents the geographical location of the closest parking lot with vacant space from the current geographical location of said communication device and a second image data which represents a route from said current geographical location of said communication device to said geographical location of the closest parking lot with vacant space when said parking lot finding mode is imple-

mented.

[3121] (3) A parking lot finding software program which displays a map data on a display of a communication device together with a first image data which represents the geographical location of the closest parking lot with vacant space from the current geographical location of said communication device and a second image data which represents a route from said current geographical location of said communication device to said geographical location of the closest parking lot with vacant space.

[3122] *<<Parts Upgradable Communication Device>>*

[3123] Figs 833a through 833x illustrate the parts upgradable Communication Device 200 which enables all elements described in Figs. 467a through 467dto be replaced and upgraded.

[3124] Fig. 833a illustrates the replacable and upgradable CCD Unit 214 (Figs. 467a through 467d) of Communication Device 200. As described in the present drawing, CCD Unit 214 is connected to Data Bus 203 via CCD Unit Connector 214a and CCD Unit Connector 214b. CCD Unit Connector 214a is detachably connected to CCD Unit Connector 214b. Therefore, CCD Unit 214 can be replaced to a new one by disconnecting CCD Unit Connector 214a

from CCD Unit Connector 214b.

[3125] Fig. 833b illustrates the replacable and upgradable Vibrator 217 (Figs. 467a through 467d) of Communication Device 200. As described in the present drawing, Vibrator 217 is connected to Data Bus 203 via Vibrator Connector 217a and Vibrator Connector 217bVibrator Connector 217b. Vibrator Connector 217a is detachably connected to Vibrator Connector 217b. Therefore, Vibrator 217 can be replaced to a new one by disconnecting Vibrator Connector 217a from Vibrator Connector 217b.

[3126] Fig. 833c illustrates the replacable and upgradable Input Device 210 (Figs. 467a through 467d) of Communication Device 200. As described in the present drawing, Input Device 210 is connected to Data Bus 203 via Input Device Connector 210a and Input Device Connector 210bVibrator Connector 217b. Input Device Connector 210a is detachably connected to Input Device Connector 210bInput Device Connector 210b. Therefore, Input Device 210 can be replaced to a new one by disconnecting Input Device Connector 210a from Input Device Connector 210b.

[3127] Fig. 833d illustrates the replacable and upgradable CPU 211 (Figs. 467a through 467d) of Communication Device 200. As described in the present drawing, CPU 211 is

connected to Data Bus 203 via CPU Connector 211a and CPU Connector 211b. CPU Connector 211a is detachably connected to CPU Connector 211b. Therefore, CPU 211 can be replaced to a new one by disconnecting CPU Connector 211a from CPU Connector 211b.

[3128] Fig. 833e illustrates the replacable and upgradable Video Processor 202 (Figs. 467a through 467d) of Communication Device 200. As described in the present drawing, Video Processor 202 is connected to Data Bus 203 via Video Processor Connector 202a and Video Processor Connector 202b. Video Processor Connector 202a is detachably connected to Video Processor Connector 202b. Therefore, Video Processor 202 can be replaced to a new one by disconnecting Video Processor Connector 202a from Video Processor Connector 202b.

[3129] Fig. 833f illustrates the replacable and upgradable Wireless Transmitter 222 (Figs. 467a through 467d) of Communication Device 200. As described in the present drawing, Wireless Transmitter 222 is connected to Video Processor 202 via Wireless Transmitter Connector 222a and Wireless Transmitter Connector 222b. Wireless Transmitter Connector 222a is detachably connected to Wireless Transmitter Connector 222b. Therefore, Wireless Trans-

mitter 222 can be replaced to a new one by disconnecting Wireless Transmitter Connector 222a from Wireless Transmitter Connector 222b.

[3130] Fig. 833g illustrates the replacable and upgradable Signal Processor 208 (Figs. 467a through 467d) of Communication Device 200. As described in the present drawing, Signal Processor 208 is connected to Data Bus 203 via Signal Processor Connector 208a and Signal Processor Connector 208b. Signal Processor Connector 208a is detachably connected to Signal Processor Connector 208b. Therefore, Signal Processor 208 can be replaced to a new one by disconnecting Signal Processor Connector 208a from Signal Processor Connector 208b.

[3131] Fig. 833h illustrates the replacable and upgradable Antenna 218 (Figs. 467a through 467d) of Communication Device 200. As described in the present drawing, Antenna 218 is connected to Signal Processor 208 via Antenna Connector 218a and Antenna Connector 218b. Antenna Connector 218a is detachably connected to Antenna Connector 218b. Therefore, Antenna 218 can be replaced to a new one by disconnecting Antenna Connector 218a from Antenna Connector 218b.

[3132] Fig. 833i illustrates the replacable and upgradable LED

219 (Figs. 467a through 467d) of Communication Device 200. As described in the present drawing, LED 219 is connected to Data Bus 203 via LED Connector 219a and LED Connector 219b. LED Connector 219a is detachably connected to LED Connector 219b. Therefore, LED 219 can be replaced to a new one by disconnecting LED Connector 219a from LED Connector 219b.

[3133] Fig. 833j illustrates the replacable and upgradable Solar Panel 229 (Figs. 467a through 467d) of Communication Device 200. As described in the present drawing, Solar Panel 229 is connected to Data Bus 203 via Solar Panel Connector 229a and Solar Panel Connector 229b. Solar Panel Connector 229a is detachably connected to Solar Panel Connector 229b. Therefore, Solar Panel 229 can be replaced to a new one by disconnecting Solar Panel Connector 229a from Solar Panel Connector 229b.

[3134] Fig. 833k illustrates the replacable and upgradable Battery 230 (Figs. 467a through 467d) of Communication Device 200. As described in the present drawing, Battery 230 is connected to Data Bus 203 via Battery Connector 230a andBattery Connector 230b. Battery Connector 230a is detachably connected to Battery Connector 230b. Therefore, Battery 230 can be replaced to a new one by discon-

necting Battery Connector 230a from Battery Connector 230b.

[3135] Fig. 833l illustrates the replacable and upgradable Flash Light Unit 220 (Figs. 467a through 467d) of Communication Device 200. As described in the present drawing, Flash Light Unit 220 is connected to Data Bus 203 via Flash Light Unit Connector 220a and FlashLight Unit Connector 220b. Flash Light Unit Connector 220a is detachably connected to Flash Light Unit Connector 220b. Therefore, Flash Light Unit 220 can be replaced to a new one by disconnecting Flash Light Unit Connector 220a from Flash Light Unit Connector 220b.

[3136] Fig. 833m illustrates the replacable and upgradable Indicator 212 (Figs. 467a through 467d) of Communication Device 200. As described in the present drawing, Indicator 212 is connected to Data Bus 203 via Indicator Connector 212a and Indicator Connector 212b. Indicator Connector 212a is detachably connected to Indicator Connector 212b. Therefore, Indicator 212 can be replaced to a new one by disconnecting Indicator Connector 212a from Indicator Connector 212b.

[3137] Fig. 833n illustrates the replacable and upgradable ROM 207 (Figs. 467a through 467d) of Communication Device

200. As described in the present drawing, ROM 207 is connected to Data Bus 203 via ROM Connector 207a and ROM Connector 207b. ROM Connector 207a is detachably connected to ROM Connector 207b. Therefore, ROM 207 can be replaced to a new one by disconnecting ROM Connector 207a from ROM Connector 207b.

[3138] Fig. 833o illustrates the replacable and upgradable RAM 206 (Figs. 467a through 467d) of Communication Device 200. As described in the present drawing, RAM 206 is connected to Data Bus 203 via RAM Connector 206a and RAM Connector 206b. RAM Connector 206a is detachably connected to RAM Connector 206b. Therefore, RAM 206 can be replaced to a new one by disconnecting RAM Connector 206a from RAM Connector 206b.

[3139] Fig. 833p illustrates the replacable and upgradable Sound Processor 205 (Figs. 467a through 467d) of Communication Device 200. As described in the present drawing, Sound Processor 205 is connected to Data Bus 203 via Sound Processor Connector 205a and Sound Processor Connector 205b. Sound Processor Connector 205a is detachably connected to Sound Processor Connector 205b. Therefore, Sound Processor 205 can be replaced to a new one by disconnecting Sound Processor Connector 205a

from Sound Processor Connector 205b.

[3140] Fig. 833q illustrates the replacable and upgradable Wireless Receiver 226 (Figs. 467a through 467d) of Communication Device 200. As described in the present drawing, Wireless Receiver 226 is connected to Sound Processor 205 viaWireless Receiver Connector 226a and Wireless Receiver Connector 226b. Wireless Receiver Connector 226a is detachably connected to Wireless Receiver Connector 226b. Therefore, Wireless Receiver 226 can be replaced to a new one by disconnecting Wireless Receiver Connector 226a from Wireless Receiver Connector 226b.

[3141] Fig. 833r illustrates the replacable and upgradable Wireless Transmitter 223 (Figs. 467a through 467d) of Communication Device 200. As described in the present drawing, Wireless Transmitter 223 is connected to Sound Processor 205 via Wireless Transmitter Connector 223a and Wireless Transmitter Connector 223b. Wireless Transmitter Connector 223a is detachably connected to Wireless Transmitter Connector 223b. Therefore, Wireless Transmitter 223 can be replaced to a new one by disconnecting Wireless Transmitter Connector 223a from Wireless Transmitter Connector 223b.

[3142] Fig. 833s illustrates the replacable and upgradable LCD

201L (Figs. 467a through 467d) of Communication Device 200. As described in the present drawing, LCD 201L is connected to Wireless Receiver 224 via LCD Connector 201La andLCD Connector 201Lb. LCD Connector 201La is detachably connected to LCD Connector 201Lb. Therefore, LCD 201L can be replaced to a new one by disconnecting LCD Connector 201La from LCD Connector 201Lb.

[3143] Fig. 833t illustrates the replacable and upgradable LCD 201R (Figs. 467a through 467d) of Communication Device 200. As described in the present drawing, LCD 201R is connected to Wireless Receiver 224 via LCD Connector 201Ra and LCD Connector 201Rb. LCD Connector 201Ra is detachably connected to LCD Connector 201Rb. Therefore, LCD 201R can be replaced to a new one by disconnecting LCD Connector 201Ra from LCD Connector 201Rb.

[3144] Fig. 833u illustrates the replacable and upgradable Speaker 216L (Figs. 467a through 467d) of Communication Device 200. As described in the present drawing, Speaker 216L is connected to Wireless Receiver 225 via Speaker Connector 216La and Speaker Connector 216Lb. Speaker Connector 216La is detachably connected to Speaker Connector 216Lb. Therefore, Speaker 216L can

be replaced to a new one by disconnecting Speaker Connector 216La from Speaker Connector 216Lb.

[3145] Fig. 833v illustrates the replacable and upgradable Speaker 216R (Figs. 467a through 467d) of Communication Device 200. As described in the present drawing, Speaker 216R is connected to Wireless Receiver 225 via Speaker Connector 216Ra and Speaker Connector 216Rb. Speaker Connector 216Ra is detachably connected to Speaker Connector 216Rb. Therefore, Speaker 216R can be replaced to a new one by disconnecting Speaker Connector 216Ra from Speaker Connector 216Rb.

[3146] Fig. 833w illustrates the replacable and upgradable Microphone 215L (Figs. 467a through 467d) of Communication Device 200. As described in the present drawing, Microphone 215L is connected to Wireless Transmitter 227 via Microphone Connector 215La and Microphone Connector 215Lb. Microphone Connector 215La is detachably connected to Microphone Connector 215Lb. Therefore, Microphone 215L can be replaced to a new one by disconnecting Microphone Connector 215La from Microphone Connector 215Lb.

[3147] Fig. 833x illustrates the replacable and upgradable Microphone 215R (Figs. 467a through 467d) of Communication

Device 200. As described in the present drawing, Microphone 215R is connected to Wireless Transmitter 227 via Microphone Connector 215Ra and Microphone Connector 215Rb. Microphone Connector 215Ra is detachably connected to Microphone Connector 215Rb. Therefore, Microphone 215R can be replaced to a new one by disconnecting Microphone Connector 215Ra from Microphone Connector 215Rb.

[3148] *<< On Demand TV Function >>*

[3149] Figs. 834 through 855 illustrate the on demand TV function which enables Communication Device 200 to display a TV program on LCD 201 (Fig. 1) on the user's demand.

[3150] Fig. 834 illustrates the storage area included in Host Information Storage Area H00a (Fig. 429) of Host H (Fig. 429). As described in the present drawing, Host Information Storage Area H00a includes On Demand TV Information Storage Area H40aof which the data and the software programs stored therein are described in Fig. 835.

[3151] Fig. 835 illustrates the the storage areas included in On Demand TV Information Storage Area H40a(Fig. 834). As described in the present drawing, On Demand TV Information Storage Area H40a includes On Demand TV Data Storage Area H40b and On Demand TV Software Storage

Area H40c. On Demand TV Data Storage Area H40b stores the data necessary to implement the present function on the side of Host H (Fig. 429), such as the ones described in Figs. 836 through 838. On Demand TV Software Storage Area H40cstores the software programs necessary to implement the present function on the side of Host H, such as the ones described in Fig. 839.

[3152] Fig. 836 illustrates the storage area included in On Demand TV Data Storage Area H40b (Fig. 835). As described in the present drawing, On Demand TV Data Storage Area H40b includes TV Program Data Storage Area H40b1of which the data stored therein are described in Figs. 837 and 838.

[3153] Fig. 837 illustrates the storage areas included in TV Program Data Storage Area H40b1(Fig. 836). As described in the present drawing, TV Program Data Storage Area H40b1 comprises two columns, i.e., 'Channel ID' and 'TV Program Data'. The column 'Channel ID' stoes the identifications of the channels available on Communication Device 200. The column 'TV Program Data' stores the TV program data of the corresponding channel ID. In the example described in the present drawing, TV Program Data Storage Area H40b1 stores 'Channel ID' H40ChID1 of

which the 'TV Program Data' is H40TPD1; 'Channel ID' H40ChID2 of which the 'TV Program Data' is H40TPD2; 'Channel ID' H40ChID3 of which the 'TV Program Data' is H40TPD3; 'Channel ID' H40ChID4 of which the 'TV Program Data' is H40TPD4; and 'Channel ID' H40ChID5 of which the 'TV Program Data' is H40TPD5.

[3154] Fig. 838 illustrates the structure of TV program data stored in the column 'TV Program Data' of TV Program Data Storage Area H40b1 (Fig. 837). Taking TV Program Data H40TPD1(Fig. 837) for example, the data comprises two types of data, i.e., the time data (which is described as 'Time (Min)' in the present drawing) and the TV program packet data (which is described as 'TV Program Packet Data' in the present drawing). TV Program Data H40TPD1, in the present example, is devided into ten TV program packet data, i.e., H40TPD1a, H40TPD1b, H40TPD1c, H40TPD1d, H40TPD1e, H40TPD1f, H40TPD1g, H40TPD1h, H40TPD1i, H40TPD1j, and H40TPD1k of which the corresponding time data are '0', '1', '2', '3', '4', '5', '6', '7', '8', '9', and'10', respectively. Each of time data '1' through '10' represents the time frame which the corresponding TV program data is displayed. Namely, TV program data H40TPD1a is displayed at time '0'. TV program

data H40TPD1b is displayed at time '1'. TV program data H40TPD1c is displayed at time '2'.TV program data H40TPD1d is displayed at time '3'. TV program data H40TPD1eis displayed at time '4'. TV program data H40TPD1f is displayed at time '5'. TV program data H40TPD1gis displayed at time '6'. TV program data H40TPD1h is displayed at time '7'. TV program data H40TPD1i is displayed at time '8'. TV program data H40TPD1j is displayed at time '9'. TV program data H40TPD1k is displayed at time '10'. Therefore, TV Pro-gram Data H40TPD1 can be paused and resumed from any time frame by identifying the time data. All TV pro-gram data stored in TV Program Data Storage Area H40b1(Fig. 837) are composed of a plurality of TV pro-gram packet data, and a time data is assigned to each TV program packet data as described in Fig. 838.

[3155] Fig. 839 illustrates the software programs stored in On Demand TV Software Storage Area H40c(Fig. 835). As de-scribed in the present drawing, On Demand TV Software Storage Area H40c stores TV Program Packet Data Sending Software H40c1, Timer Software H40c2, Current Time Identifying Software H40c3, Next Packet Data Sending Software H40c4, TV Program Pausing Software H40c5, TV

Program Resume Software H40c6, and TV Program Initializing Software H40c7. TV Program Packet Data Sending Software H40c1 is the software program which is described in Fig. 848. Timer Software H40c2 is the software program which is described in Fig. 845. Current Time Identifying Software H40c3 is the software program whichidentifies the current time produced by Timer Software H40c2. Next Packet Data Sending Software H40c4is the software program which is described in Fig. 852. TV Program Pausing Software H40c5is the software program which is described in Fig. 853. TV Program Resume Software H40c6is the software program which is described in Fig. 854. TV Program Initializing Software H40c7 is the software program which is described in Fig. 855.

[3156] Fig. 840 illustrates the storage area included in RAM 206 (Fig. 1) of Communication Device 200. As described in the present drawing, RAM 206 includes On Demand TV Information Storage Area 20640a of which thedata and the software programs stored therein are described in Fig. 841.

[3157] The data and software programs stored in On Demand TV Information Storage Area 20640a(Fig. 840) are downloaded from Host H (Fig. 429) in the manner described in

Figs. 401 through 407.

[3158] Fig. 841 illustrates the storage areas included in On Demand TV Information Storage Area 20640a (Fig. 840). As described in the present drawing, On Demand TV Information Storage Area 20640aincludes On Demand TV Data Storage Area 20640b and On Demand TV Software Storage Area 20640c. On Demand TV Data Storage Area 20640bstores the data necessary to implement the present function on the side of Communication Device 200, such as the ones described in Figs. 842 and 843. On Demand TV Software Storage Area 20640c stores the software programs necessary to implement the present function on the side of Communication Device 200, such as the ones described in Fig. 844.

[3159] Fig. 842 illustrates the storage area included in On Demand TV Data Storage Area 20640b (Fig. 841). As described inthe present drawing, On Demand TV Data Storage Area 20640b includes TV Program Data Storage Area 20640b1of which the data stored therein are described in Fig. 843.

[3160] Fig. 843 illustrates the data stored in TV Program Data Storage Area 20640b1 (Fig. 842). As described in the present drawing, TV Program Data Storage Area 20640b1

comprises two columns, i.e., 'Channel ID' and 'TV Program Packet Data'. The column 'Channel ID' stores the identification of the channels available on Communication Device 200. The column 'TV Program Packet Data' storesthe TV program packet data of the corresponding channel ID received from Host H (Fig. 429).

[3161] Fig. 844 illustrates the software program stored in On Demand TV Software Storage Area 20640c (Fig. 841). As described in the present drawing, On Demand TV Software Storage Area 20640c stores TV Program Initiating Software 20640c1, TV Program Packet Data Receiving Software 20640c2, TV Program Packet Data Displaying Software 20640c3, Next Packet Data Receiving Software 20640c4, TV Program Pausing Software 20640c5, TV Program Resume Software 20640c6, and TV Program Initializing Software 20640c7. TV Program Initiating Software 20640c1 is the software program which is described in Fig. 846. TV Program Packet Data Receiving Software 20640c2 is the software program which is described in Fig. 850. TV Program Packet Data Displaying Software 20640c3 is the software program which is described in Fig. 851. Next Packet Data Receiving Software 20640c4 is the software program which is described in Fig. 852. TV

Program Pausing Software 20640c5 is the software program which is described in Fig. 853. TV Program Resume Software 20640c6 is the software program which is described in Fig. 854. TV Program Initializing Software 20640c7 is the software program which is described in Fig. 855.

[3162] Fig. 845 illustrates Timer Software H40c2 stored in On Demand TV Software Storage Area H40c (Fig. 839) of Host H (Fig. 429). As described in the present drawing, Host H, first of all, resets the time to '0' (S1). Host H administers the time, and everytime one minute has past (S2), the timer is incrimented by '1' until the time reaches the maximum number. Referring to TV Program Data H40TPD1 described in Fig. 838 for example, when the time is reset to '0', the TV program packet data H40TPD1a is ready to be retrieved from TV Program Data Storage Area H40b1(Fig. 837). After one minute has passed, the timer is incrimented and the time is '1' at which the TV program packet data H40TPD1b is ready to be retrieved from TV Program Data Storage Area H40b1. When the timer is incrimented and the time is '2', the TV program packet data H40TPD1c is ready to be retrieved from TV Program Data Storage Area H40b1. In the same manner, when the timer

is incrimented and the time is '3', the TV program packet data H40TPD1d is ready to be retrieved from TV Program Data Storage Area H40b1; when the timer is incrimented and the time is '4', the TV program packet data H40TPD1e is ready to be retrieved from TV Program Data Storage Area H40b1; when the timer is incrimentedand the time is '5', the TV program packet data H40TPD1f is ready to be retrieved from TV Program Data Storage Area H40b1; when the timer is incrimented and the time is '6', the TV program packet data H40TPD1g is ready to be retrieved from TV Program Data Storage Area H40b1; when the timer is incrimented and the time is '7', the TV program packet data H40TPD1h is ready to be retrieved from TV Program Data Storage Area H40b1; when the timer is incrimented and the time is '8', the TV program packet data H40TPD1i is ready to be retrieved from TV Program Data Storage Area H40b1; when the timer is incrimented and the time is '9', the TV program packet data H40TPD1j is ready to be retrieved from TV Program Data Storage Area H40b1; when the timer is incrimented and the time is '10', the TV program packet data H40TPD1k is ready to be retrieved from TV Program Data Storage Area H40b1. The timer is no longer be incrimented thereafter since the time

'10' is the maximum number for TV Program Data H40TPD1 (Fig. 838). The maximum number of each TV program data stored in TV Program Data Storage Area H40b1 (Fig. 837) may be different from the other TV program data stored therein.

[3163] Fig. 846 illustrates TV Program Initiating Software 20640c1 stored in On Demand TV Software Storage Area 20640c (Fig. 844) of Communication Device 200. As described in the present drawing, a certain channel ID is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). Next, CPU 211 (Fig. 1) sends TV Program Data Request 20640TPDR to Host H (Fig. 429) of which the data stored therein are described in Fig. 847 (S2).

[3164] Fig. 847 illustrates the data included in TV Program Data Request 20640TPDR described in S2 of Fig. 846. As described in the present drawing, TV Program Data Request 20640TPDR includes Request Signal 20640TPDR1 and Channel ID 20640TPDR2. Request Signal 20640TPDR1 is an indication to Host H to retrieve the TV program data therefrom corresponding toChannel ID 20640TPDR2, and Channel ID 20640TPDR2 is the channel ID selected in S1 of Fig. 846.

[3165] Fig. 848 illustrates TV Program Packet Data Sending Software H40c1 stored in On Demand TV Software Storage Area H40c (Fig. 839) of Host H (Fig. 429). As described in the present drawing, Host H, first of all, receives TV Program Data Request 20640TPDR (Fig. 847) (S1). Host H then retrieves Channel ID 20640TPDR2 (Fig. 847) therefrom(S2), and identifies the channel ID (S3). Host H identifies the current time of the TV prograram data of the corresponding channel ID by utilizing Current Time Identifying Software H40c3 (Fig. 839) (S4), and retrieves the corresponding TV program packet data from TV Program Data Storage Area H40b1 (Fig. 837)(S5). Host H sendsto Communication Device 200 thereafter Requested TV Program Data H40RTPD of which the data stored therein are described in Fig. 849 (S6). Assuming that Channel ID 20640TPDR2 included in TV Program Data Request 20640TPDR represents 'Channel ID' H40ChID1 stored in TV Program Data Storage Area H40b1 (Fig. 837). Host H retrieves and identifies the 'Channel ID' as H40ChID1 in S2 and S3. Assuming that the TV program corresponding to 'Channel ID' H40ChID1(Fig. 837) is already on-air for five miniutes and is just about to start the sixth minute of the TV program. Host H identifies the current time (i.e., 'Time

(Min)' in Fig. 838) as '5' in S4 by utilizing Current Time Identifying Software H40c3, and retrieves the corresponding 'TV Program Packet Data' H40TPD1f from TV Program Data Storage Area H40b1in S5, which is sent to Communication Device 200 as Requested TV Program Data H40RTPD in S6.

[3166] Fig. 849 illustrates the data stored in Requested TV Program Data H40RTPD described in S6 or Fig. 848. As described in the present drawing, Requested TV Program Data H40RTPD comprises Response Signal H40RTPD1, Channel ID H40RTPD2, and TV Program Packet Data H40RTPD3. Response Signal H40RTPD1 indicates that Requested TV Program Data H40RTPD is a response to TV Program Data Request 20640TPDR described in Fig. 847. Channel ID H40RTPD2 represents 'Channel ID' H40ChID1 stored in TV Program Data Storage Area H40b1 (Fig. 837) in the present example. TV Program Packet Data H40RTPD3 represents 'TV Program Packet Data' H40TPD1f stored in TV Program Data Storage Area H40b1 in the present example.

[3167] Fig. 850 illustrates TV Program Packet Data Receiving Software 20640c2 stored in On Demand TV Software Storage Area 20640c (Fig. 844) of Communication Device 200.

Referring to the present drawing, CPU 211 (Fig. 1) receives Requested TV Program Data H40RTPD (Fig. 849) sent by Host H (Fig. 429) in S6 of Fig. 848 (S1). CPU 211 then retrieves Channel ID H40RTPD2 and TV Program Packet Data H40RTPD3 from Requested TV Program Data H40RTPD (S2), and storesthese datain TV Program Data Storage Area 20640b1 (Fig. 843) (S3). In the present example, 'Channel ID' H40ChID1 and 'TV Program Packet Data' H40TPD1f are retrieved in S2 and stored in TV Program Data Storage Area 20640b1 in S3.

[3168] Fig. 851 illustrates TV Program Packet Data Displaying Software 20640c3 stored in On Demand TV Software Storage Area 20640c (Fig. 844) of Communication Device 200. Referring to the present drawing, CPU 211 (Fig. 1) retrieves TV Program Packet Data H40RTPD3 from TV Program Data Storage Area 20640b1(Fig. 843) (S1), and displays the data on LCD 201 (Fig. 1) of Communication Device 200 (S2). In the present example, 'TV Program Packet Data' H40TPD1f is retrieved in S1 and displayed on LCD 201 in S2.

[3169] Fig. 852 illustrates both Next Packet Data Sending Software H40c4 stored in On Demand TV Software Storage Area H40c (Fig. 839) of Host H (Fig. 429) and Next Packet

Data Receiving Software 20640c4 stored in On Demand TV Software Storage Area 20640c (Fig. 844) of Communication Device 200. Referring to the present drawing, Host H (Fig. 429) retrieves the next TV program packet data from TV Program Data Storage Area H40b1 (Fig. 837) (S1), and sends the data to Communication Device 200 (S2). CPU 211 (Fig. 1) of Communication Device 200 receives the next TV program packet data (S3), and stores the data in TV Program Data Storage Area 20640b1 (Fig. 843) (S4), which is displayed on LCD 201 (Fig. 1) of Communication Device 200 thereafter. Here, the next TV program packet data is the data which is scheduled to be sent to and displayed on Communication Device 200. Referring to Fig. 838, H40TPD1b is the next TV program packet data if the TV program packet data H40TPD1a is already sent to and displayed on Communication Device 200, H40TPD1c is the next TV program packet data if the TV program packet data H40TPD1b is already sent to and displayed on Communication Device 200, H40TPD1d is the next TV program packet data if theTV program packet data H40TPD1c is already sent to and displayed on Communication Device 200, H40TPD1e is the next TV program packet data if the TV program packet data H40TPD1d is already sent to and

displayed on Communication Device 200, H40TPD1f is the next TV program packet data if the TV program packet data H40TPD1e is already sent to and displayed on Communication Device 200, H40TPD1g is the next TV program packet data if the TV program packet data H40TPD1f is already sent to and displayed on Communication Device 200, H40TPD1h is the next TV program packet data if the TV program packet data H40TPD1g is already sent to and displayed on Communication Device 200, H40TPD1i is the next TV program packet data if the TV program packet data H40TPD1h is alreadysent to and displayed on Communication Device 200, H40TPD1j is the next TV program packet data if the TV program packet data H40TPD1i is already sent to and displayed on Communication Device 200, and H40TPD1k is the next TV program packet data if the TV program packet data H40TPD1j is already sent to and displayed on Communication Device 200.

[3170] Fig. 853 illustrates both TV Program Pausing Software 20640c5 stored in On Demand TV Software Storage Area 20640c (Fig. 844) of Communication Device 200 and TV Program Pausing Software H40c5 stored in On Demand TV Software Storage Area H40c(Fig. 839) of Host H (Fig. 429). Referring to the present drawing, a pause signal is input

by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) then displays the still image included in the TV program packet data on LCD 201 (Fig. 1) at the time the pause signal is input in S1 (S2). CPU 211 sendsa pause request (S3) which is received by Host H (S4). Host H stops sending the next TV program packet data to Communication Device 200 thereafter (S5).

[3171] Fig. 854 illustrates both TV Program Resume Software 20640c6 stored in On Demand TV Software Storage Area 20640c (Fig. 844) of Communication Device 200 and TV Program Resume Software H40c6 stored in On Demand TV Software Storage Area H40c(Fig. 839) of Host H (Fig. 429). Referring to the present drawing, a resume signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) then sends aresume requestto Host H indicating to resume sending the next TV program packet data(S2). Upon receiving the resume request (S3), Host H resumessending the next TV program packet data to Communication Device 200 (S4). The next TV program packet data of the next TV program packet data is sent thereafter, and the remaining TV program packet dataare sent to and displayed on Communication Device 200 unless the pause signal described in S1 of Fig.

853 or any signal or the like is input to Communication Device 200.

[3172] Fig. 855 illustrates both TV Program Initializing Software 20640c7 stored in On Demand TV Software Storage Area 20640c (Fig. 844) of Communication Device 200 and TV Program Initializing Software H40c7 stored in On Demand TV Software Storage Area H40c (Fig. 839) of Host H (Fig. 429). Referring to the present drawing, an initializing signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) then sends aninitializing request to Host H indicating to start the TV program from the beginning (S2). Upon receiving the initializing request (S3), Host H initializes the timer of Timer Software H40c2(Fig. 845) to '0', and thereby the first TV program packet data is ready to be sent to and displayed on Communication Device 200 (S4). In the present example, the timer of Timer Software H40c2 is initialized to '0', thereby 'TV Program Packet Data' H40TPD1a of TV Program Data H40TPD1 (Fig. 838) stored in TV Program Data Storage Area H40b1(Fig. 837) is ready to be sent to and displayed on Communication Device 200. The first TV program packet data, 'TV Program Packet Data' H40TPD1a in the present example, is sent to Communication Device

200 (S5). Fig. 852 applies hereafter until the pause signal described in Fig. 853 or anysignal of the like is input to Communication Device 200.

[3173] *<< On Demand TV Function -- Summary >>*

[3174] (1) An on demand TV system comprising a host computer and a communication device wherein said host computer stores a TV program, said communication device requests for said TV program, said TV program is sent to said communication device and displayed on a display of said communication device, said TV program is paused when a pause signal is input via said input device.

[3175] (2) A communication device comprising a microphone, a speaker, a display, an input device and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and an on demand TV mode, a series of audio data are input to and output from said microphone andsaid speaker respectively when said voice communication mode is implemented, a TV program is displayed on said display and said TV program is paused when a pause signal is input via said input device when said on demand TV mode is implemented.

[3176] (3) An on demand TV software program which displays a

TV program on a display of a communication device wherein said TV program is paused under the control of said on demand TV software program when a pause signal is input via said input device.

[3177] (4) Said TV program in summary (1), (2), or (3) is resumed from the point said TV program is paused when a resume signal is input via said input device.

[3178] (5) Said TV program in summary (1), (2), or (3) is replayed from the beginning of said TV program when an initiation signal is input via said input device.

[3179] *<< Inter-communicating TV Function >>*

[3180] Figs. 856 through 882 illustrate the inter-communicating TV function which enables Communication Device 200 to send an answer data to Host H (Fig. 429) at which the answer data from a plurality of communication devices including Communication Device 200 are counted and the counting data as described in Fig. 856 is produced.

[3181] Fig. 856 illustrates the counting data produced by Host H (Fig. 429) based on the answer data received from a plurality of communication devices including Communication Device 200. As described in the present drawing, Question TVS41a and Counting Data TVS41b are shown on TV Screen TVS41 which are broadcasted by TV stations. TV

Screen TVS41 is the screen displayed on a television owned by each household in the United States. Question TVS41a is the question displayed on TV Screen TVS41asked to the viewer of a specific TV program. Counting Data TVS41b is the counting data of the answers to Question TVS41a sent from the views including the users of Communication Device 200 by utilizing the present function. In the present example, Question TVS41a is 'Are you older than 30?' and Counting Data TVS41b is 'Yes: 80%; No: 20%'.

[3182] Fig. 857 illustrates the storage area included in Host Information Storage Area H00a (Fig. 429) of Host H (Fig. 429). As described in the present drawing, Host Information Storage Area H00a includes Inter-communicating TV Information Storage Area H41a of which the data and the software program stored therein are described in Fig. 858.

[3183] Fig. 858 illustrates the storage areas included in Inter-communicating TV Information Storage Area H41a(Fig. 857). As described in the present drawing, Inter-communicating TV Information Storage Area H41a includes Inter-communicating TV Data Storage Area H41b and Inter-communicating TV Software Storage Area H41c. Inter-communicating TV Data Storage Area H41bstores

the data necessary to implement the present function on the side of Host H (Fig. 429), such as the ones described in Figs. 859 through 862. Inter-communicating TV Software Storage Area H41c stores the software programs necessary to implement the present function on the side of Host H, such as the ones described in Fig. 863.

[3184] Fig. 859 illustrates the storage areas included in Inter-communicating TV Data Storage Area H41b (Fig. 858). As described in the present drawing, Inter-communicating TV Data Storage Area H41b includes Answer Data Storage Area H41b1, Question Data Storage Area H41b2, Counting Data Storage Area H41b3, and User ID Storage Area H41b4. Answer Data Storage Area H41b1 stores the data described in Fig. 860. Question Data Storage Area H41b2 stores the data described in Fig. 861. Counting Data Storage Area H41b3 stores the data described in Fig. 862. User ID Storage Area H41b4 stores the data described in Fig. 859a.

[3185] Fig. 859a illustrates the data stored in User ID Storage Area H41b4 (Fig. 859). As described in the present drawing, User ID Storage Area H41b4 stores the identifications of each user of Communication Device 200. In the present example, User ID Storage Area H41b4 stores the following

user IDs: ID#1, ID#2, ID#3, ID#4, and ID#5.

[3186] Fig. 860 illustrates the data stored in Answer Data Storage Area H41b1 (Fig. 859). As described in the present drawing, Answer Data Storage Area H41b1 comprises two columns, i.e., 'User ID' and 'Answer Data'. The column 'User ID'stores the identifications of each user of Communication Device 200 which are identical to the ones stored in User ID Storage Area H41b4(Fig. 859a). The column 'Answer Data' stores the answer data sent from the user of Communication Device 200 of the corresponding user ID. In the present example, Answer Data Storage Area H41b1 stores the following data: 'User ID' ID#1 of which the corresponding 'Answer Data' which the user of Communication Device 200 sent is 'Yes'; 'User ID' ID#2 of which the corresponding 'Answer Data' which the user of Communication Device 200 sent is 'Yes'; 'User ID' ID#3 of which the corresponding 'Answer Data' which the user of Communication Device 200 sent is 'Yes'; 'User ID' ID#4 of which the corresponding 'Answer Data' which the user of Communication Device 200 sent is 'Yes'; and 'User ID' ID#5 of which the corresponding 'Answer Data' which the user of Communication Device 200 sent is 'No'.

[3187] Fig. 861 illustrates the data stored in Answer Data Storage

Area H41b1 (Fig. 859). As described in the present drawing, Answer Data Storage Area H41b1 comprises two columns, i.e., 'Question ID'and 'Question Data'. The column 'Question ID'stores the identifications of the question data, and the column 'Question Data' stores the question data corresponding to the question ID. In the present example, Question Data Storage Area H41b2 stores the following data: 'Question ID' Q#1 of which the corresponding question data is 'Are you older than 30?'; 'Question ID' Q#2of which the corresponding question data is 'Do you support the President?'; and 'Question ID' Q#3of which the corresponding question data is 'Do you own more than 2 cars?'

[3188] Fig. 862 illustrates the data stored in Counting Data Storage Area H41b3 (Fig. 859). As described in the present drawing, Counting Data Storage Area H41b3 comprises two columns, i.e., 'Choice Data' and 'Sub-total Data'. The column 'Choice Data' stores the choices from which the users of Communication Devices 200 can select to answer Question TVS41a(Fig. 856) displayed on TV Screen TVS41 (Fig. 856).The column 'Sub-total Data' stores the sub-total of the counting data of each 'Choice Data'. In the present example, Counting Data Storage Area H41b3

stores the following data: The 'Choice Data' 'Yes' of which the 'Sub-total Data' is '4'; and the 'Choice Data' 'No' of which the 'Sub-total Data' is '1'.

[3189] Fig. 863 illustrates software programs stored in Inter-communicating TV Software Storage Area H41c (Fig. 858). As described in the present drawing, Inter-communicating TV Software Storage Area H41c stores Question Data Sending Software H41c1, Answer Data Receiving Software H41c2, Answer Data Counting Software H41c3, Counting Data Broadcasting Software H41c4, and Counting Data Sending Software H41c5. Question Data Sending Software H41c1 is the software program described in Fig. 871. Answer Data Receiving Software H41c2 is the software program described in Fig. 877. Answer Data Counting Software H41c3 is the software program described in Fig. 878. Counting Data Broadcasting Software H41c4 is the software program described in Fig. 879. Counting Data Sending Software H41c5 is the software program described in Fig. 880.

[3190] Fig. 864 illustrates the storage area included in RAM 206 (Fig. 1) of Communication Device 200. As described in the present drawing, RAM 206 includes Inter-communicating TV Information Storage Area 20641a of which the data

and the software program stored therein are described in Fig. 865.

[3191] The data and software programs stored in Inter-communicating TV Information Storage Area 20641a(Fig. 864) are downloaded from Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[3192] Fig. 865 illustrates the storage areas includes in Inter-communicating TV Information Storage Area 20641a (Fig. 864). As described in the present drawing, Inter-communicating TV Information Storage Area 20641a includes Inter-communicating TV Data Storage Area 20641b and Inter-communicating TV Software Storage Area 20641c. Inter-communicating TV Data Storage Area 20641b stores the data necessary to implement the present function on the side of Communication Device 200, such as the ones described in Figs. 866 through 869. Inter-communicating TV Software Storage Area 20641cstores the software programs necessary to implement the present function on the side of Communication Device 200, such as the ones described in Fig. 870.

[3193] Fig. 866 illustrates the storage areas included in Inter-communicating TV Data Storage Area 20641b (Fig. 865). As described in the present drawing, Inter-communicating

TV Data Storage Area 20641b includes Question Data Storage Area 20641b1, Answer Data Storage Area 20641b2, and Counting Data Storage Area 20641b3. Question Data Storage Area 20641b1 stores data described in Fig. 867. Answer Data Storage Area 20641b2stores data described in Fig. 868. Counting Data Storage Area 20641b3 stores data described in Fig. 869.

[3194] Fig. 867 illustrates the data stored in Question Data Storage Area 20641b1 (Fig. 866). As described in the present drawing, Question Data Storage Area 20641b1 comprises two columns, i.e., 'Question ID' and 'Question Data'. The column 'Question ID'stores the identification of the question data sent from Host H (Fig. 429) as described hereinafter, and the column 'Question Data'stores the question data corresponding to the question ID which is also sent from Host H as described hereinafter. In the present example, Question Data Storage Area 20641b1 stores the following data: 'Question ID' Q#1 of which the corresponding question data is 'Are you older than 30?'

[3195] Fig. 868 illustrates the data stored in Answer Data Storage Area 20641b3 (Fig. 866). As described in the present drawing, Answer Data Storage Area 20641b3 comprises two columns, i.e., 'Question ID' and 'Answer Data'. The

column 'Question ID' stores the identification of the question data sent from Host H (Fig. 429). The column 'Answer Data' stores the answer data input by the user of Communication Device 200. In the present example, Answer Data Storage Area 20641b3stores the following data: 'Question ID''Q#1' of which the 'Answer Data' is 'Yes'.

[3196] Fig. 869 illustrates the data stored in Counting Data Storage Area 20641b3 (Fig. 866). As described in the present drawing, Counting Data Storage Area 20641b3 comprises two columns, i.e., 'Choice Data' and 'Sub-total Data'. The column 'Choice Data' stores the choices from which the users of Communication Devices 200 can select to answer Question TVS41a(Fig. 856) displayed on TV Screen TVS41 (Fig. 856).The column 'Sub-total Data'stores the sub-total of the counting data of each 'Choice Data'. In the present example, Counting Data Storage Area 20641b3 stores the following data: The 'Choice Data' 'Yes' of which the 'Sub-total Data' is '4'; and the 'Choice Data' 'No' of which the 'Sub-total Data' is '1'. Primarily, the data stored in Counting Data Storage Area 20641b3are identical to the ones stored in Counting Data Storage Area H41b3 (Fig. 862) of Host H (Fig. 429).

[3197] Fig. 870 illustrates the software programs stored in Inter-

communicating TV Software Storage Area 20641cf(Fig. 865). As described in the present drawing, Inter-communicating TV Software Storage Area 20641c stores Question Data Receiving Software 20641c1, Question Data Displaying Software 20641c2, Answer Data Inputting Software 20641c3, Answer Data Sending Software 20641c4, Counting Data Receiving Software 20641c5, Counting Data Displaying Software 20641c6, and Key Allocating Software 20641c7. Question Data Receiving Software 20641c1 is the software program described in Fig. 872. Question Data Displaying Software 20641c2 is the software program described in Fig. 873. Answer Data Inputting Software 20641c3 is the software program described in Fig. 874. Answer Data Sending Software 20641c4 is the software program described in Fig. 875. Counting Data Receiving Software 20641c5 is the software program described in Fig. 881. Counting Data Displaying Software 20641c6 is the software program described in Fig. 882. Key Allocating Software 20641c7 is the software program described in Fig. 875.

[3198] Fig. 871 illustrates Question Data Sending Software H41c1 stored in Inter-communicating TV Software Storage Area H41c (Fig. 863) of Host H (Fig. 429) which sends the

question data to Communication Device 200. Referring to the present drawing, the operator of Host H selects the question ID (S1). Host H retrieves the question data (including the question ID thereof)from Question Data Storage Area H41b2 (Fig. 861) (S2), and further retrieves the user IDs from User ID Storage Area H41b4 (Fig. 859a) (S3). Host H sends the question data (including the question ID thereof) to Communication Devices 200 of the user IDs retrieved in S3 (S4).

[3199] Fig. 872 illustrates Question Data Receiving Software 20641c1 stored in Inter-communicating TV Software Storage Area 20641c (Fig. 870) of Communication Device 200 which receives the question data from Host H (Fig. 429). Referring to the present drawing, CPU 211 (Fig. 1) receives the question data(including the question ID thereof) sent from Host H as described in S4 of Fig. 871 (S1). The question data (including the question ID thereof) is stored in Question DataStorage Area 20641b1 (Fig. 867) (S2).

[3200] Fig. 873 illustrates Question Data Displaying Software 20641c2 stored in Inter-communicating TV Software Storage Area 20641c (Fig. 870) of Communication Device 200 which displays the question data on LCD 201 (Fig. 1). Referring to the present drawing, CPU 211 (Fig. 1) retrieves

the question data from Question Data Storage Area 20641b1(Fig. 867) (S1), and displays the data on LCD 201 (S2).

[3201] Fig. 874 illustrates Answer Data Inputting Software 20641c3 stored in Inter-communicating TV Software Storage Area 20641c (Fig. 870) of Communication Device 200 to input the answer data. First of all, CPU 211 (Fig. 1) allocates the keys by Key Allocating Software 20641c7 (Fig. 875) (S1). The user of Communication Device 200 then inputs the answer data by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2), which is stored in Answer Data Storage Area 20641b3 (Fig. 868) (S3).

[3202] Fig. 875 illustrates Key Allocating Software 20641c7 stored in Inter-communicating TV Software Storage Area 20641c (Fig. 870) of Communication Device 200 to utilize the keys described in Fig 647 to input the answer data. Referring to the present drawing, CPU 211 (Fig. 1) allocate key '1' (Fig. 647) as 'Yes' (S1), and allocate key '2' as 'No' (S2).

[3203] Fig. 876 illustrates Answer Data Sending Software 20641c4 stored in Inter-communicating TV Software Storage Area 20641c (Fig. 870) of Communication Device 200 which sends the answer data to Host H (Fig. 429). Refer-

ring to the present drawing, CPU 211 (Fig. 1) retrieves the answer data from Answer Data Storage Area 20641b3 (Fig. 868) (S1), and sends the data to Host H (S2).

[3204] Fig. 877 illustrates Answer Data Receiving Software H41c2 stored in Inter-communicating TV Software Storage Area H41c (Fig. 863) of Host H (Fig. 429) which receives the answer data sent from Communication Device 200. Referring to the present drawing, Host H (Fig. 429) receives the answer data sent from Communication Device 200 as described in S2 of Fig. 876 (S1), and stores the answer data to Answer Data Storage Area H41b1 (Fig. 860) at the corresponding user ID (S2).

[3205] Fig. 878 illustrates Answer Data Counting Software H41c3 stored in Inter-communicating TV Software Storage Area H41c (Fig. 863) of Host H (Fig. 429) which counts the answer data sent from a plurality of devices. Referring to the present drawing, Host H (Fig. 429) counts the answer data stored in Answer Data Storage Area H41b1(Fig. 860) (S1), and stores the result (the counting data) in Counting Data Storage Area H41b3 (Fig. 862) (S2).

[3206] Fig. 879 illustrates Counting Data Broadcasting Software H41c4 stored in Inter-communicating TV Software Storage Area H41c (Fig. 863) of Host H (Fig. 429) which broad-

casts the counting data produced in S1 of Fig. 878. Referring to the present drawing, Host H (Fig. 429) retrieves the counting data from Counting Data Storage Area H41b3 (Fig. 862) (S1) and the question data from Question Data Storage Area H41b2(Fig. 861) (S2). The question data and the counting data are broadcasted thereafter (S3), and Question TVS41a and Counting Data TVS41b are displayed on TV Screen TVS41 as described in Fig. 856.

[3207] Fig. 880 illustrates Counting Data Sending Software H41c5 stored in Inter-communicating TV Software Storage Area H41c (Fig. 863) of Host H (Fig. 429) which sends the counting data to Communication Device 200. Referring to the present drawing, Host H retrieves the counting data from Counting Data Storage Area H41b3 (Fig. 862) (S1), and sends the data to Communication Device 200 (S2).

[3208] Fig. 881 illustrates Counting Data Receiving Software 20641c5 stored in Inter-communicating TV Software Storage Area 20641c (Fig. 870) of Communication Device 200 which receives the counting data sent from Host H(Fig. 429). Referring to the present drawing, CPU 211 (Fig. 1) receives the counting data from Host H(S1), and stores the data in Counting Data Storage Area 20641b3 (Fig. 869) (S2).

[3209] Fig. 882 illustrates Counting Data Displaying Software 20641c6 stored in Inter-communicating TV Software Storage Area 20641c (Fig. 870) of Communication Device 200 which stores the counting data. Referring to the present drawing, CPU 211 (Fig. 1) retrieves the counting data from Counting Data Storage Area 20641b3 (Fig. 869) (S1), and displays the data on LCD 201 (Fig. 1) (S2).

[3210] *<< Inter-communicating TV Function -- Summary >>*

[3211] (1) An inter-communicating system comprising a host computer and a communication device wherein said host computer sends a question data to said communication device, said communication device displays said question data on a display of said communication device, said communication device is input an answer data which is sent to said host computer, and said host computer counts a plurality of answer data received from a plurality of devices including said communication device from which said host computer produces a counting data.

[3212] (2) A communication device comprising a microphone, a speaker, a display, an input device and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and an inter-communicating mode, a series of audio data are input to

and output from said microphone and said speaker respectively when said voice communication mode is implemented, a question data is displayed on said display and an answer data is input via said input device when said inter-communicating mode is implemented.

[3213] (3) An inter-communicating software program designed to be installed into a communication device wherein a question data is displayed on a display of said communication device and an answer data is input via an input device of said communication device under the control of said inter-communicating software program.

[3214] *<<Display Controlling Function>>*

[3215] Figs 883 through 894 illustrate the display controlling function which enables Communication Device 200 to control the brightness and/or the contrast of LCD 201 (Fig. 1) per file opened or software program executed. In other words, the user of Communication Device 200 can set the brightness and/or the contrast of LCD 201 (Fig. 1) unique to each file or software program. For example, the user can set the brightness as the first brightness value and the contrast as the second contrast value for a certain MS Word document, and set the brightness as the second brightness value and the contrast as the third contrast

value for a certain shooting video game.

[3216] Fig. 883 illustrates the storage area included in RAM 206 (Fig. 1). As described in the present drawing, RAM 206 includes Display Controlling Information Storage Area 20642a of which the data and software programs stored therein are described in Fig. 884.

[3217] The data and software programs stored in Display Controlling Information Storage Area 20642a (Fig. 883) are downloaded from Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[3218] Fig. 884 illustrates the storage areas included in Display Controlling Information Storage Area 20642a (Fig. 883). As described in the present drawing, Display Controlling Information Storage Area 20642a includes Display Controlling Data Storage Area 20642b and Display Controlling Software Storage Area 20642c. Display Controlling Data Storage Area 20642b stores the data necessary to implement the present function, such as the ones described in Fig. 885. Display Controlling Software Storage Area 20642c stores the software programs necessary to implement the present function, such as the ones described in Fig. 886.

[3219] Fig. 885 illustrates the data stored in Display Controlling

Data Storage Area 20642b (Fig. 884). As described in the present drawing, Display Controlling Data Storage Area 20642b comprises two columns, i.e., 'File/Software ID' and 'Display Controlling Data', and column 'Display Controlling Data' further comprises columns 'Brightness Value' and 'Contrast Value'. Column 'File/Software ID' stores the identifications of the files and the software programs wherein the brightness value and the contrast value of each file and software program is uniquely set by utilizing the present function. Column 'Brightness Value' stores the brightness value unique to each file or software program. Column 'Contrast Value' stores the contrast value unique to each file or software program. In the example described in the present drawing, Display Controlling Data Storage Area 20642b stores the following data: 'File/Software ID' File #1 of which the 'Brightness Value' is '20642BV1' and the 'Contrast Value' is '20642CV1'; 'File/Software ID' File #2 of which the 'Brightness Value' is '20642BV2' and the 'Contrast Value' is '20642CV2'; 'File/Software ID' File #3 of which the 'Brightness Value' is 20642BV1 and the 'Contrast Value' is '20642CV3'; 'File/Software ID' Software #1 of which the 'Brightness Value' is '20642BV2' and the 'Contrast Value' is '20642CV1'; and

'File/Software ID' Software #2 of which the 'Brightness Value' is '20642BV3' and the 'Contrast Value' is '20642CV2'. Here, the brightness value '20642BV1', '20642BV2', and '20642BV3' may be of any value, such as 'high', 'medium', and 'low' respectively, or '80%', '85%', and '90%', respectively. The contrast value '20642CV1', '20642CV2', and '20642CV3' may be of any value, such as 'high', 'medium', and 'low' respectively, or '80%', '85%', and '90%', respectively.

[3220] Fig. 886 illustrates the software programs stored in Display Controlling Software Storage Area 20642c (Fig. 884). As described in the present drawing, Display Controlling Software Storage Area 20642c stores File/Software Executing Software 20642c1, Brightness Controlling Software 20642c2, Contrast Controlling Software 20642c3, Default Brightness Value Executing Software 20642c4, Default Contrast Value Executing Software 20642c5, Brightness/Contrast Setting Software 20642c6, Brightness Manually Adjusting Software 20642c7, and Contrast Manually Adjusting Software 20642c8. File/Software Executing Software 20642c1 is the software program described in Fig. 887. Brightness Controlling Software 20642c2 is the software program described in Fig. 888. Contrast Controlling

Software 20642c3 is the software program described in Fig. 889. Default Brightness Value Executing Software 20642c4 is the software program described in Fig. 890. Default Contrast Value Executing Software 20642c5 is the software program described in Fig.891. Brightness/Contrast Setting Software 20642c6 is the software program described in Fig. 892. Brightness Manually Adjusting Software 20642c7 is the software program described in Fig. 893. Contrast Manually Adjusting Software 20642c8 is the software program described in Fig. 894.

[3221] Fig. 887 illustrates File/Software Executing Software 20642c1 stored in Display Controlling Software Storage Area 20642c (Fig. 886) which opens the file or executes the software program selected by the user of Communication Device 200. Referring to the present drawing, a file or a software program is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) then opens the file or executes the software program (S2).

[3222] Fig. 888 illustrates Brightness Controlling Software 20642c2 stored in Display Controlling Software Storage Area 20642c (Fig. 886) to control the brightness of LCD 201 (Fig. 1) per file opened or per software program exe-

cuted. Referring to the present drawing, CPU 211 (Fig. 1) identifies the file or the software program selected in S1 of Fig. 887 (S1), and retrieves the brightness value from column 'Brightness Value' of Display Controlling Data Storage Area 20642b (Fig. 885) if the file or the software program identified in S1 is registered and found in column 'File/Software ID' of Display Controlling Data Storage Area 20642b (S2). CPU 211 controls the brightness of LCD 201 in accordance with the brightness value retrieved in S2 (S3).

[3223] Fig. 889 illustrates Contrast Controlling Software 20642c3 stored in Display Controlling Software Storage Area 20642c (Fig. 886) to control the contrast of LCD 201 (Fig. 1) per file opened or per software program executed. Referring to the present drawing, CPU 211 (Fig. 1) identifies the file or the software program selected in S1 of Fig. 887 (S1), and retrieves the contrast value from column 'Contrast Value' of Display Controlling Data Storage Area 20642b (Fig. 885) if the file or the software program identified in S1 is registered and found in column 'File/Software ID' of Display Controlling Data Storage Area 20642b (S2). CPU 211 controls the contrast of LCD 201 in accordance with the contrast value retrieved in S2 (S3).

[3224] Fig. 890 illustrates Default Brightness Value Executing Software 20642c4 stored in Display Controlling Software Storage Area 20642c (Fig. 886) which controls the brightness of LCD 201 (Fig. 1) if the file or the software program which is to be opened or executed is not listed in Display Controlling Data Storage Area 20642b (Fig. 885). If the file opened or the software program executed is not found in column 'File/Software ID' of Display Controlling Data Storage Area 20642b (Fig. 885), CPU 211 (Fig. 1) sets the brightness value as '20642BV2' which is the default brightness value (S1). CPU 211 then controls the brightness of LCD 201 (Fig. 1) in accordance with the default brightness value '20642BV2' (S2).

[3225] Fig. 891 illustrates Default Contrast Value Executing Software 20642c5 stored in Display Controlling Software Storage Area 20642c (Fig. 886) which controls the contrast of LCD 201 (Fig. 1) if the file or the software program which is to be opened or executed is not listed in Display Controlling Data Storage Area 20642b (Fig. 885). If the file opened or the software program executed is not found in column 'File/Software ID' of Display Controlling Data Storage Area 20642b (Fig. 885), CPU 211 (Fig. 1) sets the contrast value as '20642CV2' which is the default contrast

value (S1). CPU 211 then controls the contrast of LCD 201 (Fig. 1) in accordance with the default contrast value '20642CV2' (S2).

[3226] Fig. 892 illustrates Brightness/Contrast Setting Software 20642c6 stored in Display Controlling Software Storage Area 20642c (Fig. 886) which enables the user of Communication Device 200 to set the brightness value and/or the contrast value of each file and software program. Referring to the present drawing, CPU 211 (Fig. 1) displays a list of files and/or software programs stored in Communication Device 200 (S1). A certain file or software program is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2). When the selected file is opened or the selected software program is executed (S3), the brightness value and the contrast value are set by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S4 and S5). The values set in S4 and S5 are stored in Display Controlling Data Storage Area 20642b (Fig. 885) as well as the identification thereof (S6).

[3227] Fig. 893 illustrates Brightness Manually Adjusting Software 20642c7 stored in Display Controlling Software Storage Area 20642c (Fig. 886) which enbles the user of Communication Device 200 to manually set the brightness

value regardless of the file opened or the software program executed. Referring to the present drawing, the brightness value is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 controls the brightness of LCD 201 (Fig. 1) in accordance with the contrast value selected in S1 (S2).

[3228] Fig. 894 illustrates Contrast Manually Adjusting Software 20642c8 stored in Display Controlling Software Storage Area 20642c (Fig. 886) which enbles the user of Communication Device 200 to manually set the contrast value regardless of the file opened or the software program executed. Referring to the present drawing, the contrast value is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 controls the contrast of LCD 201 (Fig. 1) in accordance with the contrast value selected in S1 (S2).

[3229] *<<Display Controlling Function -- Summary >>*

[3230] (1) A communication device comprising a microphone, a speaker, a display, an input device and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and a display controlling mode, a series of audio data are input to and output from said microphone and said speaker respec-

tively when said voice communication mode is implemented, the brightness and/or the contrast of said display is controlled per the file opened or the software program executed when said display controlling mode is implemented.

[3231] (2) Adisplay controlling software program which controls the brightness and/or the contrast of a display of a communication device depending on the file opened or the software program executed.

[3232] *<<Multiple Party Communicating Function>*

[3233] Figs. 894a through 917 illustrate the multiple party communicating function which enables the user of Communication Device 200 to communicate with more than one person via Communication Device 200 by utilizing the present function.

[3234] Fig. 894a illustrates the storage area included in RAM 206 (Fig. 1). As described in the present drawing, RAM 206 includes Multiple Party Communicating Information Storage Area 20643a of which the data and the software programs stored therein are described in Fig. 895.

[3235] The data and software programs stored in Multiple Party Communicating Information Storage Area 20643a (Fig. 894a) are downloaded from Host H (Fig. 429) in the man-

ner described in Figs. 401 through 407.

[3236] Fig. 895 illustrates the storage areas included in Multiple Party Communicating Information Storage Area 20643a (Fig. 894a). As described in the present drawing, Multiple Party Communicating Information Storage Area 20643a includes Multiple Party Communicating Data Storage Area 20643b and Multiple Party Communicating Software Storage Area 20643c. Multiple Party Communicating Data Storage Area 20643b stores the data necessary to implement the present function, such as the ones described in Figs. 897 through 899. Multiple Party Communicating Software Storage Area 20643c stores the software programs necessary to implement the present function, such as the ones described in Fig. 900.

[3237] Fig. 896 illustrates the storage areas included in Multiple Party Communicating Data Storage Area 20643b (Fig. 895). As described in the present drawing, Multiple Party Communicating Data Storage Area 20643b includes Parties Data Storage Area 20643b1, Selected Parties Data Storage Area 20643b2, and Voice Data Storage Area 20643b3. Parties Data Storage Area 20643b1 stores data described in Fig. 897. Selected Parties Data Storage Area 20643b2 stores data described in Fig. 898. Voice Data

Storage Area 20643b3 stores data described in Fig. 899.

[3238] Fig. 897 illustrates the data stored in Parties Data Storage Area 20643b1 (Fig. 896). As described in the present drawing, Parties Data Storage Area 20643b1 comprises three columns, i.e., 'User ID', 'Name', and 'Phone Number'. Column 'User ID' stores the identifications of the persons who may be friends, family members, relatives, and/or colleagues of the user of Communication Device 200. Column 'Name' stores the name of the person of the corresponding 'User ID'. Column 'Phone Number' stores the phone number of the person of the corresponding 'User ID'. In the present example described in the present drawing, Parties Data Storage Area 20643b1 stores the following data: 'User ID' User #1 of which the corresponding 'Name' and 'Phone Number' are 'John Doe' and '916-455-1293', respectively; 'User ID' User #2 of which the corresponding 'Name' and 'Phone Number' are 'Jane Doe' and '408-222-3653', respectively; and 'User ID' User #3 of which the corresponding 'Name' and 'Phone Number' are 'Peter Pan' and '418-313-9587', respectively. 'User ID' User #1 is the identification of the user of Communication Device 200.

[3239] Fig. 898 illustrates the data stored in Selected Parties Data

Storage Area 20643b2 (Fig. 896). As described in the present drawing, Selected Parties Data Storage Area 20643b2 stores the user IDs 'User #1', 'User #2', and 'User #3'. These user IDs represent the identifications of the parties who participate in the multiple party communication by utilizing the present function. In the present example described in the present drawing, the names of the parties who participate in the multiple party communication are John Doe, Jane Doe, and Peter Pan by referring to Fig. 897.

[3240] Fig. 899 illustrates the storage areas included in Voice Data Storage Area 20643b3 (Fig. 896). As described in the present drawing, Voice Data Storage Area 20643b3 includes 1st Voice Data Storage Area 20643b3a, 2nd Voice Data Storage Area 20643b3b, and 3rd Voice Data Storage Area 20643b3c. 1st Voice Data Storage Area 20643b3a stores the voice data generated in S1 of Fig. 903. 2nd Voice Data Storage Area 20643b3b stores the voice data received in S1 of Fig. 904. 3rd Voice Data Storage Area 20643b3c stores the voice data received in S1 of Fig. 905.

[3241] Fig. 900 illustrates the software programs stored in Multiple Party Communicating Software Storage Area 20643c (Fig. 895). As described in the present drawing, Multiple

Party Communicating Software Storage Area 20643c includes Calling Party Selecting Software 20643c1, Dialing Software 20643c2, 1st Voice Data Processing Software 20643c3, 2nd Voice Data Processing Software 20643c4, and 3rd Voice Data Processing Software 20643c5. Calling Party Selecting Software 20643c1 is the software program described in Fig. 901. Dialing Software 20643c2 is the software program described in Fig. 902.1st Voice Data Processing Software 20643c3 is the software program described in Fig. 903. 2nd Voice Data Processing Software 20643c4 is the software program described in Fig. 904. 3rd Voice Data Processing Software 20643c5 is the software program described in Fig. 905.

[3242] Assume hereinafter that the user of Communication Device 200 ('John Doe') initiates a multiple party communication with his friends, Jane Doe and Peter Pan, by utilizing the present function. Communication Device 200 owned by John Doe is referred to as "Device A", the device owned by Jane Doe is referred to as "Device B", and the device owned by Peter Pan is referred to as "Device C" hereinafter.

[3243] Fig. 901 illustrates Calling Party Selecting Software 20643c1 stored in Multiple Party Communicating Software

Storage Area 20643c (Fig. 900) of Device A which selects the parties participating in the multiple party communication by utilizing the present function. Referring to the present drawing, CPU 211 (Fig. 1) displays a list of names and phone numbers as well as the user ID stored in Parties Data Storage Area 20643b1 (Fig. 897) (S1). The parties who participate in the multiple party communication are selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2). CPU 211 stores the user IDs of the selected parties in Selected Parties Data Storage Area 20643b2 (Fig. 898) (S3). In the present example, the list of 'User ID' User #1 of which the corresponding 'Name' and 'Phone Number' are 'John Doe' and '916-455-1293', respectively; 'User ID' User #2 of which the corresponding 'Name' and 'Phone Number' are 'Jane Doe' and '408-222-3653', respectively; and 'User ID' User #3 of which the corresponding 'Name' and 'Phone Number' are 'Peter Pan' and '418-313-9587', respectively is displayed on LCD 201 in S1. 'Jane Doe' and 'Peter Pan' are selected in S2. 'John Doe', the user of Communication Device 200, is automatically selected by default. The user IDs of 'John Doe', 'Jane Doe', and 'Peter Pan', i.e., user IDs User #1, User #2, and User #3, are stored in Selected Parties Data

Storage Area 20643b2 as described in Fig. 898.

[3244] Fig. 902 illustrates Dialing Software 20643c2 stored in Multiple Party Communicating Software Storage Area 20643c (Fig. 900) of Device A which initiates the dialing process to the parties participating in the multiple party communication. Referring to the present drawing, CPU 211 (Fig. 1) retrieves the phone numbers of the selected parties from Parties Data Storage Area 20643b1 (Fig. 897) by referring to the user IDs (excluding its own user ID) stored in Selected Parties Data Storage Area 20643b2 (Fig. 898) (S1), and initiates the dialing process to each phone number (S2). The line is connected thereafter (S3). In the present example, CPU 211, by referring to the user IDs User #2 and User #3 (User #1 excluded) stored in Selected Parties Data Storage Area 20643b2, retrieves the phone numbers '408-222-3653' and '418-313-9587' in S1, and initiates the dialing process to each phone number in S2. The line is connected thereafter.

[3245] Fig. 903 illustrates 1st Voice Data Processing Software 20643c3 stored in Multiple Party Communicating Software Storage Area 20643c (Fig. 900) of Device A which processes the voice data of the first party participating in the multiple party communication ('John Doe', the user of

Communication Device 200 in the present example). Referring to the present drawing, the 1st voice data is input to Device A via Microphone 215 (Fig. 1) (S1). Here, the 1st voice data is the voice data of Jon Doe. CPU 211 (Fig. 1) stores the 1st voice data in 1st Voice Data Storage Area 20643b3a (Fig. 899) (S2). CPU 211 next retrieves the 1st voice data from 1st Voice Data Storage Area 20643b3a and sends the data to Device B (S3). CPU 211 again retrieves the 1st voice data from 1st Voice Data Storage Area 20643b3a and sends the data to Device C (S4).

[3246] Fig. 904 illustrates 2nd Voice Data Processing Software 20643c4 stored in Multiple Party Communicating Software Storage Area 20643c (Fig. 900) of Device A which processes the voice data of the second party participating in the multiple party communication ('Jane Doe' in the present example). Referring to the present drawing, CPU 211 (Fig. 1) receives the 2nd voice data from Device B (S1). Here the 2nd voice data is the voice data sent from Device B. CPU 211 (Fig. 1) stores the 2nd voice data in 2nd Voice Data Storage Area 20643b3b (Fig. 899) (S2). CPU 211 next retrieves the 2nd voice data from 2nd Voice Data Storage Area 20643b3b and outputs the data from Speaker 216 (Fig. 1) (S3). CPU 211 again retrieves the 2nd

voice data from 2nd Voice Data Storage Area 20643b3b and sends the data to Device C (S4).

[3247] Fig. 905 illustrates 3rd Voice Data Processing Software 20643c5 stored in Multiple Party Communicating Software Storage Area 20643c (Fig. 900) of Device A which processes the voice data of the third party participating in the multiple party communication ('Peter Pan' in the present example). Referring to the present drawing, CPU 211 (Fig. 1) receives the 3rd voice data from Device C (S1). Here the 3rd voice data is the voice data sent from Device C. CPU 211 (Fig. 1) stores the 3rd voice data in 3rd Voice Data Storage Area 20643b3c (Fig. 899) (S2). CPU 211 next retrieves the 3rd voice data from 3rd Voice Data Storage Area 20643b3c and outputs the data from Speaker 216 (Fig. 1) (S3). CPU 211 again retrieves the 3rd voice data from 3rd Voice Data Storage Area 20643b3c and sends the data to Device B (S4).

[3248] *<<Multiple Party Communicating Function -- Another Embodiment>>*

[3249] Figs. 906 through 971 illustrate another embodiment of the present function utilizing Host H (Fig. 429).

[3250] Fig. 906 illustrates the storage area included in Host Information Storage Area H00a of Host H (Fig. 429). As de-

scribed in the present drawing, Host Information Storage Area H00a includes Multiple Party Communicating Information Storage Area H43a of which the data and the software programs stored therein are described in Fig. 907.

[3251] Fig. 907 illustrates the storage areas included in Multiple Party Communicating Information Storage Area H43a (Fig. 906). As described in the present drawing, Multiple Party Communicating Information Storage Area H43a includes Multiple Party Communicating Data Storage Area H43b and Multiple Party Communicating Software Storage Area H43c. Multiple Party Communicating Data Storage Area H43b stores the data necessary to implement the present function on the side of Host H, such as the ones described in Figs. 908 through 911. Multiple Party Communicating Software Storage Area H43c stores the software programs necessary to implement the present function on the side of Host H, such as the ones described in Fig. 912.

[3252] Fig. 908 illustrates the storage areas included in Multiple Party Communicating Data Storage Area H43b (Fig. 907). As described in the present drawing, Multiple Party Communicating Data Storage Area H43b includes Parties Data Storage Area H43b1, Selected Parties Data Storage Area H43b2, and Voice Data Storage Area H43b3. Parties Data

Storage Area H43b1 stores the data described in Fig. 909. Selected Parties Data Storage Area H43b2 stores the data described in Fig. 910. Voice Data Storage Area H43b3 stores the data described in Fig. 911.

[3253] Fig. 909 illustrates the data stored in Parties Data Storage Area H43b1 (Fig. 908). As described in the present drawing, Parties Data Storage Area H43b1 comprises three columns, i.e., 'User ID', 'Name', and 'Phone Number'. Column 'User ID' stores the identifications of the persons who may be friends, family members, relatives, and/or colleagues of the user of Communication Device 200. Column 'Name' stores the name of the person of the corresponding 'User ID'. Column 'Phone Number' stores the phone number of the person of the corresponding 'User ID'. In the present example described in the present drawing, Parties Data Storage Area H43b1 stores the following data: 'User ID' User #1 of which the corresponding 'Name' and 'Phone Number' are 'John Doe' and '916-455-1293', respectively; 'User ID' User #2 of which the corresponding 'Name' and 'Phone Number' are 'Jane Doe' and '408-222-3653', respectively; and 'User ID' User #3 of which the corresponding 'Name' and 'Phone Number' are 'Peter Pan' and '418-313-9587', respectively. 'User ID'

User #1 is the identification of the user of Communication Device 200.

[3254] Fig. 910 illustrates the data stored in Selected Parties Data Storage Area H43b2 (Fig. 908). As described in the present drawing, Selected Parties Data Storage Area H43b2 stores the user IDs 'User #1', 'User #2', and 'User #3'. These user IDs represent the identifications of the parties who participate in the multiple party communication by utilizing the present function. In the present example described in the present drawing, the names of the parties who participate in the multiple party communication are John Doe, Jane Doe, and Peter Pan by referring to Fig. 909.

[3255] Fig. 911 illustrates the storage areas included in Voice Data Storage Area H43b3 (Fig. 908). As described in the present drawing, Voice Data Storage Area H43b3 includes 1st Voice Data Storage Area H43b3a, 2nd Voice Data Storage Area H43b3b, and 3rd Voice Data Storage Area H43b3c. 1st Voice Data Storage Area H43b3a stores the voice data generated in S1 of Fig. 915. 2nd Voice Data Storage Area H43b3b stores the voice data received in S1 of Fig. 916. 3rd Voice Data Storage Area H43b3c stores the voice data received in S1 of Fig. 917.

[3256] Fig. 912 illustrates the software programs stored in Multiple Party Communicating Software Storage Area H43c (Fig. 907). As described in the present drawing, Multiple Party Communicating Software Storage Area H43c includes Calling Party Selecting Software H43c1, Dialing Software H43c2, 1st Voice Data Processing Software H43c3, 2nd Voice Data Processing Software H43c4, and 3rd Voice Data Processing Software H43c5. Calling Party Selecting Software H43c1 is the software program described in Fig. 913. Dialing Software H43c2 is the software program described in Fig. 914. 1st Voice Data Processing Software H43c3 is the software program described in Fig. 915. 2nd Voice Data Processing Software H43c4 is the software program described in Fig. 916. 3rd Voice Data Processing Software H43c5 is the software program described in Fig. 917.

[3257] Fig. 913 illustrates both Calling Party Selecting Software 20643c1 stored in Multiple Party Communicating Software Storage Area 20643c (Fig. 900) of Communication Device 200 and Calling Party Selecting Software H43c1 stored in Multiple Party Communicating Software Storage Area H43c (Fig. 912) of Host H (Fig. 429) which select the parties participating in the multiple party communication by uti-

lizing the present function. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 requests for the names and the phone numbers as well as the user IDs registered in Host H (S1). Host H (Fig. 429), in response, retrieves the names and the phone numbers (as well as the user IDs) from Parties Data Storage Area H43b1 (Fig. 909) (S2), and sends them to Communication Device 200 (S3). Upon receiving the names and the phone numbers (as well as the user IDs) from Host H (S4), CPU 211 stores them in Parties Data Storage Area 20643b1 (Fig. 897) (S5). CPU 211 then retrieves the names and the phone numbers (as well as the user IDs) from Parties Data Storage Area 20643b1 and displays a list of the names and the phone numbers (as well as the user IDs) on LCD 201 (Fig. 1) (S6). The parties participating in the multiple party communication are selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S7). CPU 211 stores the user IDs of the selected parties in Selected Parties Data Storage Area 20643b2 (Fig. 898) (S8). CPU 211 then retrieves and sends the user IDs of the selected parties to Host H (S9). Host H receives the user IDs and stores them in Selected Parties Data Storage Area H43b2 (Fig. 910) (S10). In the present example, the list of 'User ID'

User #1 of which the corresponding 'Name' and 'Phone Number' are 'John Doe' and '916-455-1293', respectively; 'User ID' User #2 of which the corresponding 'Name' and 'Phone Number' are 'Jane Doe' and '408-222-3653', respectively; and 'User ID' User #3 of which the corresponding 'Name' and 'Phone Number' are 'Peter Pan' and '418-313-9587', respectively is retrieved in S2 and received by Communication Device 200 in S4, and further displayed on LCD 201 in S6. 'Jane Doe' and 'Peter Pan' are selected in S7. 'John Doe', the user of Communication Device 200, is automatically selected by default. The user IDs of 'John Doe', 'Jane Doe', and 'Peter Pan', i.e., user IDs User #1, User #2, and User #3 are stored in Selected Parties Data Storage Area 20643b2 as described in S8, which are sent to Host H and stored in Selected Parties Data Storage Area H43b2 in S10.

[3258] Fig. 914 illustrates Dialing Software H43c2 stored in Multiple Party Communicating Software Storage Area H43c (Fig. 912) of Host H (Fig. 429) which initiates the dialing process to the parties participating in the multiple party communication. Referring to the present drawing, Host H (Fig. 429) retrieves the phone numbers of the selected parties from Parties Data Storage Area H43b1 (Fig. 909)

by referring to the user IDs stored in Selected Parties Data Storage Area H43b2 (Fig. 910) (S1), and initiates the dialing process to each phone number (S2). The line is connected thereafter (S3). In the present example, Host H by referring to the user IDs User #1, User #2, and User #3 stored in Selected Parties Data Storage Area H43b2, retrieves the phone numbers '916-455-1293', '408-222-3653', and '418-313-9587' in S1, and initiates the dialing process to each phone number in S2. The line is connected thereafter.

[3259] Fig. 915 illustrates both 1st Voice Data Processing Software 20643c3 stored in Multiple Party Communicating Software Storage Area 20643c (Fig. 900) of Communication Device 200 and 1st Voice Data Processing Software H43c3 stored in Multiple Party Communicating Software Storage Area H43c (Fig. 912) of Host H (Fig. 429) which process the voice data of the first party participating in the multiple party communication ('John Doe', the user of Communication Device 200 in the present example). Referring to the present drawing, the 1st voice data is input to Device A via Microphone 215 (Fig. 1) (S1). Here, the 1st voice data is the voice data of Jone Doe. CPU 211 (Fig. 1) stores the 1st voice data in 1st Voice Data Storage Area

20643b3a (Fig. 899) (S2). CPU 211 next retrieves the 1st voice data from 1st Voice Data Storage Area 20643b3a and sends the data to Host H (S3). Host H receives the 1st voice data (S4), and stores the data in 1st Voice Data Storage Area H43b3a (Fig. 911) (S5). Host H then retreives the 1st voice data from 1st Voice Data Storage Area H43b3a (S6), and sends the data to Device B and Device C (S7). Both Device B and Device C receive and store the 1st voice data in their memories (S8), which are retrieved and output from their speakers thereafter (S9).

[3260] Fig. 916 illustrates both 2nd Voice Data Processing Software 20643c4 stored in Multiple Party Communicating Software Storage Area 20643c (Fig. 900) of Communication Device 200 and 2nd Voice Data Processing Software H43c4 stored in Multiple Party Communicating Software Storage Area H43c (Fig. 912) of Host H (Fig. 429) which process the voice data of the second party participating in the multiple party communication ('Jane Doe' in the present example). Referring to the present drawing, Host H receives the 2nd voice data from Device B (S1). Here the 2nd voice data is the voice data sent from Device B. Host H stores the 2nd voice data in 2nd Voice Data Storage Area H43b3b (Fig. 911) (S2). Host H next retrieves the 2nd

voice data from 2nd Voice Data Storage Area H43b3b (S3), and sends the data to Device A and Device C (S4). Both Device A and Device C receive and store the 2nd voice data in their memories (S5), which are retrieved and output from their speakers thereafter (S6).

[3261] Fig. 917 illustrates both 3rd Voice Data Processing Software 20643c5 stored in Multiple Party Communicating Software Storage Area 20643c (Fig. 900) of Communication Device 200 and 3rd Voice Data Processing Software H43c5 stored in Multiple Party Communicating Software Storage Area H43c (Fig. 912) of Host H (Fig. 429) which process the voice data of the third party participating in the multiple party communication ('Peter Pan' in the present example). Referring to the present drawing, Host H receives the 3rd voice data from Device C (S1). Here the 3rd voice data is the voice data sent from Device C. Host H stores the 3rd voice data in 3rd Voice Data Storage Area H43b3c (Fig. 911) (S2). Host H next retrieves the 3rd voice data from 3rd Voice Data Storage Area H43b3c (S3), and sends the data to Device A and Device B (S4). Both Device A and Device B receive and store the 3rd voice data in their memories (S5), which are retrieved and output from their speakers thereafter (S6).

[3262] *<<Multiple Party Communicating Function -- Summary>>*

[3263] (1) A multiple party communicating system comprising a host computer, a communication device, wherein a list of counter communication devices are displayed on a display of a communication device, more than one counter communication devices are selected from said list via an input device of said communication device, an input audio data is input via a microphone of said communication device which is sent to more than one counter communication devices via said host computer, and the audio data sent from said more than one counter communication devices via said host computer are output from a speaker of said communication device under the control of said multiple party communicating software program.

[3264] (2) A communication device comprising a microphone, a speaker, a display, an input device and a multiple mode implementor, wherein said multiple mode implementor implements a two-party communication mode and a multiple party communicating mode, an input audio data is input via said microphone which is sent to one counter communication device and the audio data sent from said counter communication device is output from said speaker thereby enabling two-party communication when

said two-party communication mode is implemented, said input audio data is input via said microphone which is sent to more than one counter communication devices and the audio data sent from said more than one counter communication devices are output from said speaker thereby enabling multiple party communication when said multiple party communication mode is implemented.

[3265] (3) A multiple party communicating software program wherein a list of counter communication devices are displayed on a display of a communication device, more than one counter communication devices are selected from said list via an input device of said communication device, an input audio data is input via a microphone of said communication device which is sent to more than one counter communication devices, and the audio data sent from said more than one counter communication devices are output from a speaker of said communication device under the control of said multiple party communicating software program.

[3266] *<<Display Brightness Controlling Function>>*

[3267] Figs. 918 through 923 illustrate the display brightness controlling function which controls the brightness of LCD 201 (Fig. 1) in accordance with the brightness detected by

Photometer 232 (Fig. 467a) of the surrounding area of the user of Communication Device 200.

[3268] Fig. 918 illustrates the storage areas included in RAM 206 (Fig. 1). As described in the present drawing, RAM 206 includes Display Brightness Controlling Info Storage Area 20644a of which the data and the software programs stored therein are described in Fig. 919.

[3269] Fig. 919 illustrates the storage areas included in Display Brightness Controlling Info Storage Area 20644a (Fig. 918). As described in the present drawing, Display Brightness Controlling Info Storage Area 20644a includes Display Brightness Controlling Data Storage Area 20644b and Display Brightness Controlling Software Storage Area 20644c. Display Brightness Controlling Data Storage Area 20644b stores the data necessary to implement the present function, such as the one described in Fig. 920. Display Brightness Controlling Software Storage Area 20644c stores the software programs necessary to implement the present function, such as the ones described in Fig. 921.

[3270] Fig. 920 illustrates the data stored in Display Brightness Controlling Data Storage Area 20644b (Fig. 919). As described in the present drawing, Display Brightness Con-

trolling Data Storage Area 20644b comprises two columns, i.e.,'Photometer Value' and 'Brightness Value'. 'Photometer Value' represents the value of the brightness detected by Photometer 232 (Fig. 467a). 'Brightness Value' represents the value of the brightness of LCD 201 (Fig. 1). In the present example described in the present drawing, the brightness value is '3' when the photometer value is '1'; the brightness value is '2' when the photometer value is '2'; and the brightness value is '1' when the photometer value is '3'.

[3271] Fig. 921 illustrates the software programs stored in Display Brightness Controlling Software Storage Area 20644c (Fig. 919). As described in the present drawing, Display Brightness Controlling Software Storage Area 20644c stores Brightness Controlling Software 20644c1 and Brightness Manually Adjusting Software 20642c2. Brightness Controlling Software 20644c1 is the software program described in Fig. 922. Brightness Manually Adjusting Software 20642c2 is the software program described in Fig. 923.

[3272] Fig. 922 illustrates Brightness Controlling Software 20644c1 stored in Display Brightness Controlling Software Storage Area 20644c (Fig. 921) which automatically con-

trols the brightness of LCD 201 (Fig. 1). Referring to the present drawing, CPU 211 (Fig. 1) determines the photometer value detected by Photometer 232 (Fig. 467a) (S1). CPU 211 then refers to Display Brightness Controlling Data Storage Area 20644b (Fig. 920) and retrieves the corresponding brightness value therefrom (S2), and controls the brightness of LCD 201 (S3). For example, assuming that CPU 211 determines that the photometer value detected by Photometer 232 in S1 is '1'. Then CPU 211 refers to Display Brightness Controlling Data Storage Area 20644b (Fig. 920) and retrieves the corresponding brightness value '3' therefrom in S2, and controls the brightness of LCD 201 accordingly in S3.

[3273] Fig. 923 illustrates Brightness Manually Adjusting Software 20642c2 stored in Display Brightness Controlling Software Storage Area 20644c (Fig. 921) which enables the user of Communication Device 200 to manually adjust the brightness of LCD 201 (Fig. 1). Referring to the present drawing, CPU 211 (Fig. 1) displays on LCD 201 (Fig. 1) the selectable brightness values by retrieving the data from the column 'Brightness Value' of Display Brightness Controlling Data Storage Area 20644b (Fig. 920) (S1). One of the brightness value is selected by utilizing Input

Device 210 (Fig. 1) or via voice recognition system (S2), and CPU 211 controls the brightness of LCD 201 accordingly (S3).

[3274] *<<Display Brightness Controlling Function -- Summary>>*

[3275] A mobile communication device comprising a display, a photometer, an antenna, and a multiple mode implementor wherein said multiple mode implementor implements a communication mode and a display brightness controlling mode, said mobile communication device sends and receives a series of data via said antenna when said mobile communication device is in said communication mode, and the brightness of said display is controlled in accordance with the light received by said photometer when said mobile communication device is in said display controlling mode.

[3276] *<<Multiple Party Pin-pointing Function>>*

[3277] Figs. 924 through 950f illustrate the multiple party pin-pointing function of the positioning system which enables Communication Device 200 to display the accurate locations of the wireless communication devices (including itself) in an artificial structure, such as a non-movable structure (e.g., building and house) and a movable struc-

ture (e.g., train, airplane, space shuttle, and space station). Figs. 20a through 26 apply to implement the multiple party pin-pointing function. An example of Device A displaying the locations of Devices A, B, and C is utilized hereinafter wherein Devices A, B, and C are Communication Devices 200.

[3278] Fig. 924 illustrates the building in which Devices A, B, and C are located. Referring to Fig. 924, Building 45BLD is composed of Basement 45BSM1 (the basement), Floor 45FLR1 (the first floor), Floor 45FLR2 (the second floor), and Floor 45FLR3 (the third floor).

[3279] Fig. 925 illustrates the relays installed in each room of Building 45BLD (Fig. 924). Referring to Fig. 925, each Room 45RM of Building 45BLD is installed of a plurality of relays which are utilized for detecting the locations of Devices A, B, and C by the method so-called 'GPS' as described in Figs. 20a through 26. In the present example, four relays, i.e., R51 through R54 are installed in Room 45RM in the manner described in Fig. 925.

[3280] Fig. 926 illustrates the relays installed in each corridor of Building 45BLD (Fig. 924). Referring to Fig. 926, each Corridor 45CRD of Building 45BLD is installed of a plurality of relays which are utilized for detecting the locations of De-

vices A, B, and C by the method so-called 'GPS' as described in Figs. 20a through 26. In the present example, nine relays, i.e., R55 through R63 are installed in Corridor 45CRD in the manner described in Fig. 926.

[3281] Referring to Fig. 927, the user of Device A selects the display type by utilizing Input Device 210 (Fig. 1) or via voice recognition system. Here, the display type available in the present embodiment are the display type #1 (which displays the area map with the indication of the locations of Devices A, B, and C therein as described in Fig. 928), the display type #2 (which displays the building and each floor with the indication of the locations of Devices A, B, and C therein as described in Fig. 929), and the display type #3 (which displays the room and the indication of the locations of Devices A, B, and C therein as described in Fig. 930). In one embodiment, the display type #1 is selected when a specific key of Input Device 210 is pressed once (S1), the display type #2 is selected when the specific key of Input Device 210 is pressed again (S2), and the display type #3 is selected when the specific key of Input Device 210 is pressed for one more time (S3).

[3282] Fig. 928 illustrates the method to display an area map describing the area where Devices A, B, and C are located.

As described in Fig. 928, Area Map Display Area 20145AMD in which an area map is shown with the locations of Devices A, B, and C is displayed on LCD 201 (Fig. 1) when a specific key of Input Device 210 is pressed as described in S1 of Fig. 927.

[3283] Fig. 929 illustrates the method to display the building and the floor where Devices A, B, and C are located. As described in Fig. 929, Building 45BLD and each floor thereof (e.g., Basement 45BSM1, Floor 45FLR1, Floor 45FLR2, and Floor 45FLR3 in Fig. 924) are displayed on LCD 201 (Fig. 1) when a specific key of Input Device 210 is pressed in the manner described in S2 of Fig. 927. LCD 201 indicates that Devices A, B, and C are located on Floor 45FLR2 (the second floor) of Building 45BLD in the example described in Fig. 929.

[3284] Fig. 930 illustrates the method to display the room where Devices A, B, and C are located. As described in Fig. 930, Room 45RM is displayed on LCD 201 (Fig. 1) when a specific key of Input Device 210 (Fig. 1) is pressed in the manner described in S3 of Fig. 927. LCD 201 indicates that Devices A, B, and C are located in Room 45RM and the location therein as described in Fig. 930.

[3285] Figs. 931 through 936 illustrates an embodiment of pin-

pointing the locations of Devices A, B, and C in a train.

[3286] Referring to Fig. 931, Train 45TRN is composed of four cars, i.e., Car 45CR1 (the first car), Car 45CR2 (the second car), Car 45CR3 (the third car), and Car 45CR4 (the fourth car).

[3287] Fig. 932 illustrates the relays installed in each car of Train 45TRN (Fig. 931). Taking Car 45CR1 for example, Car 45CR1 is installed of a plurality of relays which are utilized for detecting the existence and the precise location of Communication Device 200 therein by utilizing the method so-called 'GPS' as described in Figs. 20a through 26. In the present example, six relays, i.e., R71 through R76 are installed in Car 45CR1 in the manner described in Fig. 932.

[3288] Referring to Fig. 933, the user of Device A selects the display type by utilizing Input Device 210 (Fig. 1) or via voice recognition system in the manner described in Fig. 933. Here, the display type available in thepresent embodiment are the display type #1 (which displays the area map with the indication of the locations of Devices A, B, and C therein as described in Fig. 934), the display type #2 (which displays the main structure of Train 45TRN (Fig. 931) with the indication of the locations of Devices A, B,

and C therein as described in Fig. 935), and the display type #3 (which displays the car and the indication of the locations of Devices A, B, and C therein as described in Fig. 936). In one embodiment, the display type #1 is selected when a specific key of Input Device 210 is pressed once (S1), the display type #2 is selected when the specific key of Input Device 210 is pressed again (S2), and the display type #3 is selected when the specific key of Input Device 210 is pressed for one more time (S3).

[3289] Fig. 934 illustrates the method to display an area map describing the area where Devices A, B, and C are located. As described in Fig. 934, Area Map Display Area 20145AMD in which an area map is shown is displayed onLCD 201 (Fig. 1) when a specific key of Input Device 210 is pressed as described in S1 of Fig. 933.

[3290] Fig. 935 illustrates the method to display the train and the car where Devices A, B, and C are located. Asdescribed in Fig. 935, Train 45TRN and each care thereof (e.g., Car 45CR1, Car 45CR2, Car 45CR3, and Car 45CR4) are displayed on LCD 201 (Fig. 1) when a specific key of Input Device 210 is pressed in the manner described in S2 of Fig. 933. LCD 201 indicates that Devices A, B, and C are located in Car 45CR1 (the first car) of Train 45TRN in the

example described in Fig. 935.

[3291] Fig. 936 illustrates the method to display the car where Devices A, B, and C are located. Assuming that Devices A, B, and C are located in Car 45CR1. As described in Fig. 936, Car 45CR1 is displayed on LCD 201 (Fig. 1) when a specific key of Input Device 210 (Fig. 1) is pressed in the manner described in S3 of Fig. 933. LCD 201 indicates that Devices A, B, and C are located in Car 45CR1 and the location therein as described in Fig. 936.

[3292] Fig. 937 illustrates the information stored in Host Information Storage Area H00a (Fig. 429). As described in Fig. 937, Host Information Storage Area H00a includes GPS Information Storage Area H45a of which the details are described in Fig. 938.

[3293] Fig. 938 illustrates the storage areas included in GPS Information Storage Area H45a (Fig. 937). As described in Fig. 938, GPS Information Storage Area H45a includes GPS Software Storage Area H45b and GPS Data Storage Area H45c. GPS Software Storage Area H45b stores the software programs necessary to implement the present function on the side of Host H (Fig. 429), such as the one described in Fig. 940. GPS Data Storage Area H45c stores the data necessary to implement the present function on the side of

Host H, such as the one described in Fig. 939.

[3294] Fig. 939 illustrates the storage areas included in GPS Data Storage Area H45c (Fig. 938). As described in Fig. 939, GPS Data Storage Area H45c includes Communication Device Location Data Storage Area H45c1, Map Data Storage Area H45c2, 3D Map Data Storage Area H45c3, Character Data Storage Area H45c4, and Relay Location Data Storage Area H45c5. Communication Device Location Data Storage Area H45c1 stores the location data of Devices A, B, and C. Map Data Storage Area H45c2 stores a plurality of map data which are designed to be sent to Device A. 3D Map Data Storage Area H45c3 stores a plurality of three-dimensional version of map data corresponding to the map data stored in Map Data Storage Area H45c2. Character Data Storage Area H45c4 stores various types of character data designed to be displayed on LCD 201 (Fig. 1) of Device A. Relay Location Data Storage Area H45c5 stores the location data of the relays and relating data thereto as described in Fig. 939a hereinafter.

[3295] Fig. 939a illustrates the data stored in Relay Location Data Storage Area H45c5 (Fig. 939). Referring to Fig. 939a, Relay Location Data Storage Area H45c5 stores a plurality of the Relay ID, the Location Data and theReference Data.

The column Relay ID stores identifications assigned to each relay. The column Location Data stores location data in x, y, z format of each relay utilized for calculating the locations of Devices A, B, and C by the GPS system of which the details are explained in Figs. 20a through 26. The column Reference Data stores the identification of each building, floor number, and the room identification in which the relays are installed. Assume that Building 45BLD (Fig. 924) is assigned as 'Building #5', Floor 45FLR3 (Fig. 924) is assigned as 'Floor #3', Room 45RM (Fig. 925) is assigned as 'Room #1', and Corridor 45CRD (Fig. 926) is assigned as 'Corridor #1'. Taking the data described in Fig. 939a for example, the Location Data of Relay ID R51 is x51,y51,z51 and its Reference Data is Building #5,Floor #3,Room #1 which means that relay R51 is installed in Room #1 located on Floor #3 of Building #5. In the same manner, the Location Data of Relay ID R52 is x52,y52,z52 and its Reference Data is Building #5,Floor #3,Room #1which means that relay R52 is installed in Room #1 located on Floor #3 of Building #5; the Location Data of Relay ID R53 is x53,y53,z53 and its Reference Data is Building #5,Floor #3,Room #1which means that relay R53 is installed in Room #1 located on Floor #3 of Building #5; the

Location Data of Relay ID R54 is x54,y54,z54 and its Reference Data is Building #5,Floor #3,Room #1which means that relay R54 is installed in Room #1 located on Floor #3 of Building #5; the Location Data of Relay ID R55 is x55,y55,z55 and its Reference Data is Building #5,Floor #3,Corridor #1which means that relay R55 is installed in Corridor #1 located on Floor #3 of Building #5; the Location Data of Relay ID R56 is x56,y56,z56 and its Reference Data is Building #5,Floor #3,Corridor #1which means that relay R56 is installed in Corridor #1 located on Floor #3 of Building #5; the Location Data of Relay ID R57 is x57,y57,z57 and its Reference Data is Building #5,Floor #3,Corridor #1which means that relay R57 is installed in Corridor #1 located on Floor #3 of Building #5; the Location Data of Relay ID R58 is x58,y58,z58 and its Reference Data is Building #5,Floor #3,Corridor #1which means that relay R58 is installed in Corridor #1 located on Floor #3 of Building #5; the Location Data of Relay ID R59 is x59,y59,z59 and its Reference Data is Building #5,Floor #3,Corridor #1which means that relay R59 is installed in Corridor #1 located on Floor #3 of Building #5; the Location Data of Relay ID R60 is x60,y60,z60 and its Reference Data is Building #5,Floor #3,Corridor #1which means that

relay R60 is installed in Corridor #1 located on Floor #3 of Building #5; the Location Data of Relay ID R61 is x61,y61,z61 and its Reference Data is Building #5,Floor #3,Corridor #1which means that relay R61 is installed in Corridor #1 located on Floor #3 of Building #5; the Location Data of Relay ID R62 is x62,y62,z62 and its Reference Data is Building #5,Floor #3,Corridor #1which means that relay R62 is installed in Corridor #1 located on Floor#3 of Building #5; and the Location Data of Relay ID R63 is x63,y63,z63 and its Reference Data is Building #5,Floor #3,Corridor #1which means that relay R63 is installed in Corridor #1 located on Floor #3 of Building #5.

[3296] Fig. 940 illustrates the sequence of the software program stored in GPS Software Storage Area H45b (Fig. 938) of Host H (Fig. 429). Assume that Devices A, B, and C are located in Room #1 (Room 45RM (Fig. 925)). Referring to Fig. 940, Host H (Fig. 429) identifies the locations of Devices A, B, and C by utilizing the GPS system based on the data received from the relevant relays (S1). In the present example, Host H identifies the locations of Devices A, B, and C by calculating the data receivedfrom relays R51 through R54. Next, Host H retrieves data from Relay Location Data Storage Area H45c5 (Fig. 939a) the Relay ID, the

Location Data and the Reference Data of the corresponding relays (S2). In the present example, the Relay ID, the Location Data and the Reference Data of relays R51 through R54 are retrieved. Host H then retrieves the map data regarding the surrounding area from Map Data Storage Area H45c2 (Fig. 939) and also the corresponding 3D map data from 3D Map Data Storage Area H45c3 (Fig. 939) (S3). In the present example, Host H retrieves the map data and the 3D map data of the area surrounding Building 45BLD (Fig. 924). Next, Host H retrieves the character data stored in Character Data Storage Area H45c4 (Fig. 939) which are designed tobe displayed on LCD 201 (Fig. 1) of Device A (S4). The examples of the character data retrieved by Host H are the image data of Building 45BLD (Fig. 924) and Room 45RM (Fig. 925) as described in Figs. 929 and 930. The data retrieved in S1 through S4 are sent to Device A (S5).

[3297] Fig. 941 illustrates the information stored in RAM 206 (Fig. 1) of Device A. As described in Fig. 941, RAM 206 includes GPS Information Storage Area 20645a of which the details are described in Fig. 942.

[3298] The data and software programs stored in GPS Information Storage Area 20645a (Fig. 941) are downloaded from

Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[3299] Fig. 942 illustrates the storage areas included in GPS Information Storage Area 20645a (Fig. 941). As described in Fig. 942, GPS Information Storage Area 20645a includes GPS Software Storage Area 20645b and GPS Data StorageArea 20645c. GPS Software Storage Area 20645b stores the software programs necessary to implement the present function on the side of Device A, such as the one described in Fig. 944. GPS Data Storage Area 20645c stores the data necessary to implement the present function on the side of Device A, such as the ones described in Fig. 943.

[3300] Fig. 943 illustrates the storage areas included in GPS Data Storage Area 20645c (Fig. 942). As described in Fig. 943, GPS Data Storage Area 20645c includes Communication Device Location Data Storage Area 20645c1, Map Data Storage Area 20645c2, 3D Map Data Storage Area 20645c3, Character Data Storage Area 20645c4, and Relay Location Data Storage Area 20645c5. Communication Device Location Data Storage Area 20645c1 stores location data of Devices A, B, and C which is retrieved in S1 of Fig. 940. Map Data Storage Area 20645c2 stores the map

data which is retrieved in S2 of Fig. 940. 3D Map Data Storage Area 20645c3 stores a three-dimensional version of map data corresponding to the map data stored in Map Data Storage Area 20645c2, which is also retrieved in S2 of Fig. 940. Character Data Storage Area 20645c4 stores character data designed to be displayed on LCD 201 (Fig. 1) of Device A which are retrieved in S4 of Fig. 940. Relay Location Data Storage Area 20645c5 stores the location data of the relays and relating data there to which are retrieved in S2 of Fig. 940.

[3301] Fig. 943a illustrates the data stored in Relay Location Data Storage Area 20645c5 (Fig. 943) which are retrieved in S2 of Fig. 940. Referring to Fig. 943a, Relay Location Data Storage Area 20645c5 (Fig. 943) stores aplurality of the Relay ID, the Location Data and the Reference Data. The column Relay ID stores the identifications assigned to each relay. The column Location Data stores location data of each relay in x, y, z format utilized for calculating the locationof Devices A, B, and C by the GPS system of which the details are explained in Figs. 20a through 26. The column Reference Data stores the identifications of the building, floor number, and the room identification in which the relays are installed. Assume that Building 45BLD

(Fig. 924) is assigned as 'Building #5', Floor 45FLR3 (Fig. 924) is assigned as 'Floor #3', Room 45RM (Fig. 925) is assigned as 'Room #1', and Corridor 45CRD (Fig. 926) is assigned as 'Corridor #1'. Taking the data described in Fig. 943a for example, the Location Data of Relay ID R51 is x51,y51,z51 and its Reference Data is Building #5,Floor #3,Room #1 which means that relay R51 is installed in Room #1 located on Floor #3 of Building #5. In the same manner, the Location Data of Relay ID R52 is x52,y52,z52 and its Reference Data is Building #5,Floor #3,Room #1which means that relay R52 is installed in Room #1 located on Floor #3 of Building #5; the Location Data of Relay ID R53 is x53,y53,z53 and its Reference Data is Building #5,Floor #3,Room #1which means that relay R53 is installed in Room #1 located on Floor #3 of Building #5; and the Location Data of Relay ID R54 is x54,y54,z54 and its Reference Data is Building #5,Floor #3,Room #1which means that relay R54 is installed in Room #1 located on Floor #3 of Building #5.

[3302] Fig. 943b illustrates the sequence of the software program stored in GPS Software Storage Area 20645b (Fig. 942) of Communication Device 200 which receives the data sent in S5 of Fig. 940. Referring to the present draw-

ing, CPU 211 (Fig. 1) receives the data sent from Host H (Fig. 429) in S5 of Fig. 940 (S1), and stores the data in the relevant areas of GPS Data Storage Area 20645c (Fig. 943) (S2).

[3303] Fig. 944 illustrates the sequence of the software program stored in GPS Software Storage Area 20645b (Fig. 942) of Communication Device 200 to select the display type. Referring to Fig. 944, the user of Device A selects the display type by utilizing Input Device 210 (Fig. 1) or via voice recognition system in the manner described in Fig. 927. Here, the display type available in the present embodiment are the display type #1 (which displays the area map with the indication of the locations ofDevices A, B, and C therein as described in Fig. 928), the display type #2 (which displays the building and each floor with the indication of the locations of Devices A, B, and C therein as described in Fig. 929), and the display type #3 (which displays the room and the indication of the locations of Devices A, B, and C therein as described in Fig. 930) (S1).

[3304] Fig. 945 illustrates the sequence of the software program stored in GPS Software Storage Area 20645b (Fig. 942) of Communication Device 200 when display type #1 is selected in S1 of Fig. 944. Referring to Fig. 945, CPU 211

(Fig. 1) retrieves the map data from Map Data Storage Area 20645c2 (Fig. 943) (S1). CPU 211 then retrieves the location data of Devices A, B, and C from Communication Device Location Data Storage Area 20645c1 (Fig. 943) (S2). CPU 211 identifies the locations of Devices A, B, and C in the retrieved map data (S3). The retrieved map data and the locations of Devices A, B, and C therein are displayed on LCD 201 (Fig. 1) as described in Fig. 928 (S4). As another embodiment, a 3D map data may also be displayed. Namely, CPU 211 (Fig. 1) retrieves the 3D map data from 3D Map Data Storage Area 20645c3 (Fig. 943) (S1). CPU 211 then retrieves the location data of Devices A, B, and C from Communication Device Location Data Storage Area 20645c1 (Fig. 943) (S2). CPU 211 identifies the locations of Devices A, B, and C in the retrieved 3D map data (S3). The retrieved 3D map data and the locations of Devices A, B, and C therein are displayed on LCD 201 (Fig. 1) (S4).

[3305] Fig. 946 illustrates the sequence of the software program stored in GPS Software Storage Area 20645b (Fig. 942) when display type #2 is selected in S1 of Fig. 944. Referring to Fig. 946, CPU 211 (Fig. 1) retrieves the character data of Building 45BLD (Fig. 924) from Character Data

Storage Area 20645c4 (Fig. 943) (S1). CPU 211 then retrieves the location data of Devices A, B, and C from Communication Device Location Data Storage Area 20645c1 (Fig. 943) (S2). CPU 211 identifies the locations of Devices A, B, and C in Building 45BLD (S3). Building 45BLD and the locations of Devices A, B, and C therein are displayed on LCD 201 (Fig. 1) as described in Fig. 929 (S4).

[3306] Fig. 947 illustrates the sequence of the software program stored in GPS Software Storage Area 20645b (Fig. 942) when display type #3 is selected in S1 of Fig. 944. Referring to Fig. 947, CPU 211 (Fig. 1) retrieves the character data of Room 45RM (Fig. 925) from Character Data Storage Area 20645c4 (Fig. 943) (S1). CPU 211 then retrieves the location data of Devices A, B, and C from Communication Device Location Data Storage Area 20645c1 (Fig. 943) (S2). CPU 211 identifies the locations of Devices A, B, and C in Room 45RM (S3). Room 45RM and the locations of Devices A, B, and C therein are displayed on LCD 201 (Fig. 1) as described in Fig. 930 (S4).

[3307] *<<Multiple Party Pin-pointing Function -- Another Embodiment>>*

[3308] Figs. 948 through 950f illustrates another embodiment of the present function which enables to display the loca-

tions of the selected devices and display each device in a split window.

[3309] Fig. 948 illustrates both the sequence of the software program stored in GPS Software Storage Area 20645b (Fig. 942) of Communication Device 200 and the sequence of the software program stored in GPS Software Storage Area H45b (Fig. 938) of Host H (Fig. 429). Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 displays a list of devices (in the present example, Device A, B, and C) (S1). The devices of which the locations are to be displayed on LCD 201 (Fig. 1) are selected therefrom by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2). The device data which represents the identifications of the devices selected in S2 is sent to Host H (S3). Host H receives the device data to identify the location of each device (S4). Assume hereinafter that the devices selected in S2 are Device A, B, and C.

[3310] Fig. 949 illustrates the sequence of the software program stored in GPS Software Storage Area H45b (Fig. 938) of Host H (Fig. 429). Referring to the present drawing, Host H identifies the locations of the devices selected in S2 of Fig. 948 (i.e., Devices A, B, and C) by utilizing the GPS

system based on the data received from the relevant relays (S1). Next, Host H retrieves the data from Relay Location Data Storage Area H45c5 (Fig. 939a) the Relay ID, the Location Data and the Reference Data of the corresponding relays for each device (S2). Host H then retrieves the map data regarding the surrounding area from Map Data Storage Area H45c2 (Fig. 939) and also the corresponding 3D map data from 3D Map Data Storage Area H45c3 (Fig. 939) (S3) for each device. Next, Host H retrieves the character data stored in Character Data Storage Area H45c4 (Fig. 939) for each device which are designed to be displayed on LCD 201 (Fig. 1) of Device A (S4). The data retrieved in S1 through S4 are sent to Device A (S5).

[3311] Fig. 949a illustrates the sequence of the software program stored in GPS Software Storage Area 20645b (Fig. 942) of Communication Device 200 which receives the data sent from Host H (Fig. 429) in S5 of Fig. 949. Referring to the present drawing, CPU 211 (Fig. 1) receives the data sent from Host H in S5 of Fig. 949 (S1), and stores the data in the relevant areas of GPS Data Storage Area 20645c (Fig. 943) (S2).

[3312] Fig. 950 illustrates the sequence of the software program stored in GPS Software Storage Area 20645b (Fig. 942) of

Communication Device 200 to select the display type to display the location of Device A. Referring to Fig. 950, the user of Device A selects the display type by utilizing Input Device 210 (Fig. 1) or via voice recognition system in the manner described in Fig. 927. Here, the display type available in the present embodiment are the display type #1 (which displays the area map with the indication of the location of Devices A), the display type #2 (which displays the building and each floor with the indication of the locations of Devices A), and the display type #3 (which displays the room and the indication of the location of Device A) (S1).

[3313] Fig. 950a illustrates the sequence of the software program stored in GPS Software Storage Area 20645b (Fig. 942) of Communication Device 200 to select the display type to display the location of Device B. Referring to Fig. 950a, the user of Device A selects the display type by utilizing Input Device 210 (Fig. 1) or via voice recognition system in the manner described in Fig. 927. Here, the display type available in the present embodiment are the display type #1 (which displays the area map with the indication of the location of Devices B), the display type #2 (which displays the building and each floor with the indication of the loca-

tions of Devices B), and the display type #3 (which displays the room and the indication of the location of Device B) (S1).

[3314] Fig. 950b illustrates the sequence of the software program stored in GPS Software Storage Area 20645b (Fig. 942) of Communication Device 200 to select the display type to display the location of Device C. Referring to Fig. 950a, the user of Device A selects the display type by utilizing Input Device 210 (Fig. 1) or via voice recognition system in the manner described in Fig. 927. Here, the display type available in the present embodiment are the display type #1 (whichdisplays the area map with the indication of the location of Devices C), the display type #2 (which displays the building and each floor with the indication of the locations of Devices C), and the display type #3 (which displays the room and the indication of the location of Device C) (S1).

[3315] Fig. 950c illustrates the sequence of the software program stored in GPS Software Storage Area 20645b (Fig. 942) of Communication Device 200 to display on LCD 201 (Fig. 1) the locations of Devices A, B, and C in the split windows. Referring to the present drawing, CPU 211 (Fig. 1) displays the split windows on LCD 201 (S1). Three split windows,

split window #1, split window #2, and split window #3, are displayed on LCD 201 in the present embodiment to display the locations of Devices A, B, and C respectively. CPU 211 displays the location of Device A in the split window #1 by utilizing the display type selected in Fig. 950 (S2). CPU 211 displays the location of Device B in the split window #2 by utilizing the display type selected in Fig. 950a (S3). CPU 211 displays the location of Device C in the split window #3 by utilizing the display type selected in Fig. 950b (S4).

[3316] Fig. 950d illustrates the sequence of the software program stored in GPS Software Storage Area 20645b (Fig. 942) of Communication Device 200 when display type #1 is selected in S1 of Fig. 950, 950a, and 950b. Referring to Fig. 950d, CPU 211 (Fig. 1) retrieves the map data from Map Data Storage Area 20645c2 (Fig. 943) (S1). CPU 211 then retrieves the location data of the relevant device (i.e., Device A in Fig. 950, Device B in Fig. 950a, and Device C in Fig. 950b) from Communication Device Location Data Storage Area 20645c1 (Fig. 943) (S2). CPU 211 identifies the location of the relevant device (i.e., Device A in Fig. 950, Device B in Fig. 950a, and Device C in Fig. 950b) in the retrieved map data (S3). The retrieved map data and

the location of the relevant device therein is displayed in the relevant split window (the split window #1 if Device A, the split window #2 if Device B, and the split window #3 if Device C) as described in S2 of Fig. 950c (S4). As another embodiment, a 3D map data may also be displayed. Namely,CPU 211 (Fig. 1) retrieves the 3D map data from 3D Map Data Storage Area 20645c3 (Fig. 943) (S1). CPU 211 then retrieves the location data of the relevant device from Communication Device Location Data Storage Area 20645c1 (Fig. 943) (S2). CPU 211 identifies the location of the relevant device in the retrieved 3D map data (S3). The retrieved 3D map data and the location of the relevant device therein are displayed in the relevant split window as described in Fig. 950c (S4).

[3317] Fig. 950e illustrates the sequence of the software program stored in GPS Software Storage Area 20645b (Fig. 942) of Communication Device 200 when display type #2 is selected in S1 of Fig. 950, 950a, and 950b. Referring to Fig. 950e, CPU 211 (Fig. 1) retrieves the character data of Building 45BLD (Fig. 924) from Character Data Storage Area 20645c4 (Fig. 943) (S1). CPU 211 then retrieves the location data of the relevant device (i.e., Device A in Fig. 950, Device B in Fig. 950a, and Device C in Fig. 950b)

from Communication Device Location Data Storage Area 20645c1 (Fig. 943) (S2). CPU 211 identifies the location of the relevant device in Building 45BLD (S3). Building 45BLD and the location of the relevant device (i.e., Device A in Fig. 950, Device B in Fig. 950a, and Device C in Fig. 950b) therein are displayed in the relevant split window as described in Fig. 950c (S4).

[3318] Fig. 950f illustrates the sequence of the software program stored in GPS Software Storage Area 20645b (Fig. 942) of Communication Device 200 when display type #3 is selected in S1 of Fig. 950, 950a, and 950b. Referring to Fig. 950f, CPU 211 (Fig. 1) retrieves the character data of Room 45RM (Fig. 925) from Character Data Storage Area 20645c4 (Fig. 943) (S1). CPU 211 then retrieves the location data of the relevant device (i.e., Device A in Fig. 950, Device B in Fig. 950a, and Device C in Fig. 950b) from Communication Device Location Data Storage Area 20645c1 (Fig. 943) (S2). CPU 211 identifies the location of the relevant device in Room 45RM (S3). Room 45RM and the location of the relevant device therein are displayed in the relevant split window as described in Fig. 950c (S4).

[3319] For the avoidance of doubt, the concept described in Figs. 924 through 950f is also applicable to display the loca-

tions of any number of devices.

[3320] *<<Multiple Party Pin-pointing Function -- Summary>>*

[3321] (1) A positioning system comprising a plurality of relays, a host, a communication device, a target device, said plurality of relays are installed in an artificial structure, said host identifies the location of said target device located in said artificial structure, said receiver device comprises a display, and said display outputs a character data of said artificial structure with a mark indicating the location of said target device located therein.

[3322] (2) A communication device comprising a display, a memory, a CPU, wherein said memory stores a character data of an artificial structure, said memory stores a location data, and said display outputs said character data of said artificial structure with a mark corresponding to said location data.

[3323] (3) A positioning system comprising a plurality of relays, a host, said host comprises a memory stored a character data, said plurality of relays are installed in an artificial structure, said host calculates an location data based on data received from said plurality of relays, said host retrieves said character data from said memory, and said host outputs said location data and said character data.

[3324] *<<Digital Camera Function>>*

[3325] Figs. 951 through 968 illustrate the digital camera function which enables Communication Device 200 to take digital photos by utilizing CCD Unit 214 (Fig. 1).

[3326] Fig. 951 illustrates the storage area included in RAM 206 (Fig. 1). As described in the present drawing, RAM 206 includes Digital Camera Information Storage Area 20646a of which the data and the software programs stored therein are described in Fig. 951a.

[3327] Thedata and software programs stored in Digital Camera Information Storage Area 20646a (Fig. 951) are downloaded from Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[3328] Fig. 951a illustrates thestorage areas included in Digital Camera Information Storage Area 20646a (Fig. 951). As described in the present drawing, Digital Camera Information Storage Area 20646a includes Digital Camera Data Storage Area 20646b and Digital Camera Software Storage Area 20646c. Digital Camera Data Storage Area 20646b stores the data necessary to implement the present function, such as the ones described in Figs. 952 through 954. Digital Camera Software Storage Area 20646c stores the software programs necessary to implement the present

function, such as the ones described in Fig. 955.

[3329] Fig. 952 illustrates the storage areas included in Digital Camera Data Storage Area 20646b (Fig. 951a). As described in the present drawing, Digital Camera Data Storage Area 20646b includes Photo Data Storage Area 20646b1 and Digital Camera Function Data Storage Area 20646b2. Photo Data Storage Area 20646b1 stores the data described in Fig. 953. Digital Camera Function Data Storage Area 20646b2 stores the data stored in Fig. 954.

[3330] Fig. 953 illustrates the data stored in Photo Data Storage Area 20646b1 (Fig. 952). As described in the present drawing, Photo Data Storage Area 20646b1 comprises two columns, i.e., 'Photo ID' and 'Photo Data'. Column 'Photo ID' stores the identifications of the photo data, and column 'Photo Data' stores a plurality of photo data taken by implementing the present function. In the example described in the present drawing, Photo Data Storage Area 20646b1 stores the following data: 'Photo ID' Photo #1 of which the 'Photo Data' is 46PD1; 'Photo ID' Photo #2 of which the 'Photo Data' is 46PD2; 'Photo ID' Photo #3 of which the 'Photo Data' is 46PD3; 'Photo ID' Photo #4 of which the 'Photo Data' is 46PD4; and 'Photo ID' Photo #5 of which the 'Photo Data' is 46PD5.

[3331] Fig. 954 illustrates the storage areas included in Digital Camera Function Data Storage Area 20646b2 (Fig. 952). As describedin the present drawing, Digital Camera Function Data Storage Area 20646b2 includes Quality Data Storage Area 20646b2a, Multiple Photo Shooting Number Data Storage Area 20646b2b, and Strobe Data Storage Area 20646b2c. Quality Data Storage Area 20646b2a stores the data selected in S2 of Fig. 957. Multiple Photo Shooting Number Data Storage Area 20646b2b stores the data selected in S2 of Fig. 958. Strobe Data Storage Area 20646b2c stores the data selected in S2 of Fig. 959.

[3332] Fig. 955 illustrates the software programs stored in Digital Camera Software Storage Area 20646c (Fig. 951a). As described in the present drawing, Digital Camera Software Storage Area 20646c stores Quality Selecting Software 20646c1, Multiple Photo Shooting Software 20646c2, Trimming Software 20646c3, Digital Zooming Software 20646c4, Strobe Software 20646c5, Digital Camera Function Selecting Software 20646c6, Multiple Photo Shooting Number Selecting Software 20646c7, Strobe On/Off Selecting Software 20646c8, Photo Data Shooting Software 20646c9, and Multiple Photo Shooting Software 20646c10. Quality Selecting Software 20646c1 is the soft-

ware program described in Fig. 957. Multiple Photo Shooting Software 20646c2 is the software program described in Fig. 961. Trimming Software 20646c3 is the software program described in Fig. 968. Digital Zooming Software 20646c4 is the software program described in Fig. 965. Strobe Software 20646c5 is the software program described in Fig. 962. Digital Camera Function Selecting Software 20646c6 is the software program described in Fig. 956. Multiple Photo Shooting Number Selecting Software 20646c7 is the software program described in Fig. 958. Strobe On/Off Selecting Software 20646c8 is the software program described in Fig. 959. Photo Data Shooting Software 20646c9 is the software program described in Fig. 960.

[3333] Fig. 956 illustrates Digital Camera Function Selecting Software 20646c6 stored in Digital Camera Software Storage Area 20646c (Fig. 955) which administers the overall flow of displaying the functions and selecting the option for each function. Referring to the present drawing, a list of functions is displayed on LCD 201 (Fig. 1) (S1). The items displayed on LCD 201 are 'Quality', 'Multiple Photo', and 'Strobe'. A function is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2), and the

relevant software program is activated thereafter (S3). In the present embodiment, Quality Selecting Software 20646c1 described in Fig. 957 is activated when 'Quality' displayed on LCD 201 is selected in S2. Multiple Photo Shooting Number Selecting Software 20646c7 described in Fig. 958 is activated when 'Multiple Photo' is selected in S2. Strobe On/Off Selecting Software 20646c8 described in Fig. 959 is activated when 'Strobe' is selected in S2.

[3334] Fig. 957 illustrates Quality Selecting Software 20646c1 stored in Digital Camera Software Storage Area 20646c (Fig. 955) which selects the quality of the photo data taken by implementing the present function. Referring to the present drawing, a list of options is displayed on LCD 201 (Fig. 1) (S1). The options displayed on LCD 201 are 'High', 'STD', and 'Low' in the present embodiment. One of the options is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2). The resolution of the photo data taken is high if 'High' is selected; the resolution of the photo taken is standard if 'STD' is selected; and the resolution of the photo taken is low if 'Low' is selected. The selected option is stored as the quality data in Quality Data Storage Area 20646b2a (Fig. 954) (S3).

[3335] Fig. 958 illustrates Multiple Photo Shooting Number Se-

lecting Software 20646c7 stored in Digital Camera Software Storage Area 20646c (Fig. 955) which selects the number of photos taken by a single photo shooting signal. Referring to the present drawing, a list of options is displayed on LCD 201 (Fig. 1) (S1). The options displayed on LCD 201 are figures from '1' through '10'. Only one photo is taken by a photo shooting signal if '1' is selected; two photos are taken by a photo shooting signal if '2' is selected; three photos are taken by a photo shooting signal if '3' is selected; four photos are taken by a photo shooting signal if '4' is selected; five photos are taken by a photo shooting signal if '5' is selected; six photos are taken by a photo shooting signal if '6' is selected; seven photos are taken by a photo shooting signal if '7' is selected; eight photos are taken by a photo shooting signal if '8' is selected; nine photos are taken by a photo shooting signal if '9' is selected; and ten photos are taken by a photo shooting signal if '10' is selected. A digit from '1' through '10' is selected by utilizing Input Device 210 (Fig.1) or via voice recognition system (S2). The selected digital is stored as the multiple photo shooting number data in Multiple Photo Shooting Number Data Storage Area 20646b2b (Fig. 954) (S3).

[3336] Fig. 959 illustrates Strobe On/Off Selecting Software 20646c8 stored in Digital Camera Software Storage Area 20646c (Fig. 955) whichselects Flash Light Unit 220 (Fig. 467a) to be activated or not when a photo is taken. Referring to the present drawing, a list of options is displayed on LCD 201 (Fig. 1) (S1). The options displayed on LCD 201 are 'On' and 'Off'. Flash Light Unit 220 is activated at the time photo is taken if 'On' is selected; and Flash Light Unit 220 is not activated at the time photo is taken if 'Off' is selected. One of the two options is selected by utilizing Input Device 210 (Fig.1) or via voice recognition system (S2). The selected option is stored as the strobe data in Strobe Data Storage Area 20646b2c (Fig. 954) (S3).

[3337] Fig. 960 illustrates Photo Data Shooting Software 20646c9 stored in Digital Camera Software Storage Area 20646c (Fig. 955) which takes photo(s) in accordance with the options selected in Figs. 957. Referring to the present drawing, a photo shooting signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). Here, the photo shooting signal indicates CPU 211 (Fig. 1) to input photo data to CCD Unit 214 (Fig. 1) and store the data in Photo Data Storage Area 20646b1 (Fig. 953). CPU 211 then retrieves the quality data from Quality Data Storage

Area 20646b2a (Fig. 954) (S2). The photo data is input via CCD Unit 214 (S3), and the data is stored in Photo Data Storage Area 20646b1 (Fig. 953) with new photo ID in accordance with the quality data retrieved in S2 (S4).

[3338] Fig. 961 illustrates Multiple Photo Shooting Software 20646c2 stored in Digital Camera Software Storage Area 20646c (Fig. 955) which takes photo(s) in accordance with the options selected in Figs. 958. Referring to the present drawing, a photo shooting signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) retrieves the multiple photo shooting number data from Multiple Photo Shooting Number Data Storage Area 20646b2b (Fig. 954) (S2). CPU 211 then takes photos in accordance with the multiple photo shooting number data retrieved in S2 (S3). Namely, only one photo is taken by a photo shooting signal if the multiple photo shooting number data retrieved in S2 is '1'; two photos are taken by a photo shooting signal if the multiple photo shooting number data retrieved in S2 is '2'; three photos are taken by a photo shooting signal if the multiple photo shooting number data retrieved in S2 is '3'; four photos are taken by a photo shooting signal if the multiple photo shooting number data retrieved in S2 is '4';

five photos are taken by a photo shooting signal if the multiple photo shooting number data retrieved in S2 is '5'; six photos are taken by a photo shooting signal if the multiple photo shooting number dataretrieved in S2 is '6'; seven photos are taken by a photo shooting signal if the multiple photo shooting number data retrieved in S2 is '7'; eight photos are taken by a photo shooting signal if the multiple photo shooting number data retrieved in S2 is '8'; nine photos are taken by a photo shooting signal if the multiple photo shooting number data retrieved in S2 is '9'; and ten photos are taken by a photo shooting signal if the multiple photo shooting number data retrieved in S2 is "10'.

[3339] Fig. 962 illustrates Strobe Software 20646c5 stored in Digital Camera Software Storage Area 20646c (Fig. 955)which takes photo(s) in accordance with the options selected in Figs. 959. Referring to the present drawing, a photo shooting signal is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) retrieves the strobe data from Strobe Data Storage Area 20646b2c (Fig. 954) (S2). If the strobe data is 'On' (S3), CPU 211 activates Flash Light Unit 220 (Fig. 467a) each time a photo is taken (S4). In other words, Strobe

Software 20646c5 is harmonized with Multiple Photo Shooting Software 20646c2 described in Fig. 961. Namely, Flash Light Unit 220 is activated for one time if one photo is taken by a single photo shooting signal. Flash Light Unit 220 is activated for two times if two photos are taken by a single photo shooting signal. Flash Light Unit 220 is activated for three times if three photos are taken by a single photo shooting signal. Flash Light Unit 220 is activated for four times if four photos are taken by a single photo shooting signal. Flash Light Unit 220 is activated for five times if five photos are taken by a single photo shooting signal. Flash Light Unit 220 is activatedfor six times if six photos are taken by a single photo shooting signal. Flash Light Unit 220 is activated for seven times if seven photos are taken by a single photo shooting signal. Flash Light Unit 220 is activated for eight times if eight photos are taken by a single photo shooting signal. Flash Light Unit 220 is activated for nine times if nine photos are taken by a single photo shooting signal. Flash Light Unit 220 is activated for ten times if ten photos are taken by a single photo shooting signal.

[3340] Fig. 963 illustrates one embodiment of the zooming function which zooms the photo data stored in Photo Data

Storage Area 20646b1 (Fig. 953). Referring to the present drawing, a certain photo selected by the user of Communication Device 200 is displayed on LCD 201 (Fig. 1). Assuming that the user intends to zoom Object 20646Obj, the object displayed on LCD 201, to a larger size. The user selects Area 46ARa which includes Object 20646Obj by utilizing Input Device 210 (Fig. 1) or via voice recognition system, and the selected area is zoomed to fit the size of LCD 201. The zoomed photo is replaced with the original photo.

[3341] Fig. 964 illustrates the operation performed in RAM 206 (Fig. 1) to implement the zooming function described in Fig. 963. A certain photo data selected by the user of Communication Device 200 is stored in Area 20646ARa of RAM 206. Here, the size of the photo data is as same as that of Area 20646ARa. Referring to the present drawing, Display Area 20646DA is the area which is displayed on LCD 201 (Fig. 1). Area 46ARa is the area which is selected by the user of Communication Device 200. Object 20646Obj is the object included in the photo data. Area 46ARa which includes Object 20646Obj is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system, and the photo data stored in Area 20646ARa is

zoomed to the size in which the size of Area 46ARa equals to that of Display Area 20646DA. The zoomed photo data is replaced with the original photo data and stored in Photo Data Storage Area 20646b1 (Fig. 953). The portion of the photo data which does not fit Area 20646ARa is cropped.

[3342] Fig. 965 illustrates Digital Zooming Software 20646c4 stored in Digital Camera Software Storage Area 20646c (Fig. 955) which implements the operation described in Fig. 964. Referring to the present drawing, CPU 211 (Fig. 1) displays a list of the photo IDs representing the photo data stored in Photo Data Storage Area 20646b1 (Fig. 953) as well as the thumbnails (S1). A certain photo data is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2), and the selected photo data is displayed on LCD 201 (Fig. 1) as described in Fig. 963 (S3). Area 46ARa described in Fig. 963 is selected by utilizing Input Device 210 or via voice recognition system (S4). When a zooming signal is input by utilizing Input Device 210 or via voice recognition system (S5), CPU 211 (Fig. 1) implements the process described in Fig. 964 and replaces the original photo data with the zoomed photo data, which is stored in Photo Data Storage Area 20646b1

(Fig. 953) (S6).

[3343] Fig. 966 illustrates one embodiment of the trimming function which trims the photo data stored in Photo Data Storage Area 20646b1 (Fig. 953) and thereby moves the selected object to the center of the photo data. Referring to the present drawing, a certain photo selected by the user of Communication Device 200 is displayed on LCD 201 (Fig. 1). Point 20646PTa adjacent to Object 20646Obj is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system, and the photo is centered at Point 20646PTa. The trimmed photo is replaced with the original photo.

[3344] Fig. 967 illustrates the operation performed in RAM 206 (Fig. 1) to implement the trimming function described in Fig. 966. Referring to the present drawing, Display Area 20646DA is the portion of the photo data which is displayed on LCD 201 (Fig. 1). Object 20646Obj is the object included in the photo data. Point 20646PTa is the point selected by the user of Communication Device 200 adjacent to Object 20646Obj which is centered by the present function. Referring to the present drawing, a certain photo data selected by the user of Communication Device 200 is stored in Area 20646ARb of RAM 206. Here, the size of

the photo data is as same as that of Area 20646ARb. Point 20646PTa is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system, and the photo data is centered at Point 20646PTa by sliding the entire photo data to the right. The trimmed photo data is replaced with the original photo data and stored in Photo Data Storage Area 20646b1 (Fig. 953). The portion of the photo data which does not fit Area 20646ARa is cropped.

[3345] Fig. 968 illustrates Trimming Software 20646c3 stored in Digital Camera Software Storage Area 20646c (Fig. 955) which implements the operation described in Fig. 967. Referring to the present drawing, CPU 211 (Fig. 1) displays a list of the photo IDs representing the photo data stored in Photo Data Storage Area 20646b1 (Fig. 953) as well as the thumbnails (S1). A certain photo data is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2), and the selected photo data is displayed on LCD 201 (Fig. 1) as described in Fig. 966 (S3). Point 20646PTa described in Fig. 966 is selected by utilizing Input Device 210 or via voice recognition system (S4). When a trimming signal is input by utilizing Input Device 210 or via voice recognition system (S5), CPU 211 (Fig. 1) centers the photo data at Point 20646PTa as described in Fig. 697

and replaces the original photo data with the trimmed photo data, which is stored in Photo Data Storage Area 20646b1 (Fig. 953) (S6).

[3346] *<<Digital Camera Function -- Summary>>*

[3347] (1) A communication device comprising a microphone, a speaker, a display, an input device, a CCD unit, a memory and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and a digital camera mode, a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, and a photo data is input via said CCD unit at the time a photo shooting signal is input via said input device and stored in said memory when said digital camera mode is implemented.

[3348] (2) The quality of said photo data stored in said memory is selected by utilizing said input device in advance of storing said photo data in said memory.

[3349] (3) A plurality of photo data are stored in said memory by a single photo shooting signal.

[3350] (4) Said photo data stored in said memory is displayed on said display and zoomed when zooming signal is input via said input device.

[3351] (5) Said photo data stored in said memory is displayed on said display and trimmed when trimming signal is input via said input device.

[3352] *<<Phone Number Linking Function>>*

[3353] Figs. 968a through 983 illustrate the phone number linking function which enables the user of Communication Device 200 to dial a phone number in a convenient manner by automatically displaying a phone number link with the phone number, i.e., underline the phone number and/or change its font color and input the phone number by a simple method such as clicking the link.

[3354] Fig. 968a illustrates the storage area included in RAM 206 (Fig. 1). As described in the present drawing, RAM 206 includes Phone Number Linking Information Storage Area 20647a of which the data and the software programs stored therein are described in Fig. 969.

[3355] The data and software programs stored in Phone Number Linking Information Storage Area 20647a (Fig. 968a) are downloaded from Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[3356] Fig. 969 illustrates the storage areas included in Phone Number Linking Information Storage Area 20647a (Fig. 968a). As described in the present drawing, Phone Num-

ber Linking Information Storage Area 20647a includes Phone Number Linking Data Storage Area 20647b and Phone Number Linking Software Storage Area 20647c. Phone Number Linking Data Storage Area 20647b stores the data necessary to implement the present function, such as the ones described in Figs. 970 and 971. Phone Number Linking Software Storage Area 20647c stores the software programs necessary to implement the present function, such as the ones described in Fig. 972.

[3357] Fig. 970 illustrates the storage areas included in Phone Number Linking Data Storage Area 20647b (Fig. 969). As described in the present drawing, Phone Number Linking Data Storage Area 20647b includes Phone Number Data Storage Area 20647b1 and Temporary Data Storage Area 20647b2. Phone Number Data Storage Area 20647b1 stores data described in Fig. 971. Temporary Data Storage Area 20647b2 is utilized to temporarily store various types of data, which is also utilized as a work area.

[3358] Fig. 971 illustrates the data stored in Phone Number Data Storage Area 20647b1 (Fig. 970). As described in the present drawing, Phone Number Data Storage Area 20647b1 comprises two columns, i.e., "Phone Number ID" and "Phone Number Data". Column "Phone Number ID"

stores the identifications of the phone number data stored in column "Phone Number ID", and column "Phone Number ID" stores a plurality of phone number data detected by implementing the present function as described hereinafter. In the present example described in the present drawing, Phone Number Data Storage Area 20647b1 stores the "Phone Number ID" PN #1 of which the corresponding "Phone Number Data" is (916) 455-1293; the "Phone Number ID" PN #2 of which the corresponding "Phone Number Data" is (408) 424-9387; and the "Phone Number ID" PN #3 of which the corresponding "Phone Number Data" is (544) 293-2938.

[3359] Fig. 972 illustrates the software programs stored in Phone Number Linking Software Storage Area 20647c (Fig. 969). As described in the present drawing, Phone Number Linking Software Storage Area 20647c stores Phone Number Detecting Software 20647c1, Phone Number Detecting Software 20647c2, Phone Number Detecting Software 20647c3, Phone Number Displaying Software 20647c4, Phone Number Dialing Software 20647c5, and Phone Book Displaying Software 20647c6. Phone Number Detecting Software 20647c1 is the software program described in Fig. 973. Phone Number Detecting Software 20647c2 is

the software program described in Fig. 974. Phone Number Detecting Software 20647c3 is the software program described in Fig. 975. Phone Number Displaying Software 20647c4 is the software program described in Fig. 976. Phone Number Dialing Software 20647c5 is the software program described in Fig. 977. Phone Book Displaying Software 20647c6 is the software program described in Fig. 978.

[3360] Fig. 973 illustrates Phone Number Detecting Software 20647c1 stored in Phone Number Linking Software Storage Area 20647c (Fig. 972) which detects the phone number data included in an e-mail and displays the phone number data with a phone number link on LCD 201 (Fig. 1). Referring to the present drawing, CPU 211 (Fig. 1) displays the received email on LCD 201 (S1). CPU 211 (Fig. 1) scans the email and if a phone number data is included therein (S2), CPU 211 stores the phone number data in Phone Number Data Storage Area 20647b1 (Fig. 971) (S3). CPU 211 displays the phone number data on LCD 201 with a phone number link (i.e., the phone number data is underlined and the font color thereof is changed to another color, such as blue) (S4).

[3361] Fig. 974 illustrates Phone Number Detecting Software

20647c2 stored in Phone Number Linking Software Storage Area 20647c (Fig. 972) which detects the phone number data in real time included in a series of alphanumeric data input by utilizing Input Device 210 (Fig. 1) or via voice recognition system and displays the phone number data with a phone number link on LCD 201 (Fig. 1). Referring to the present drawing, a series of alphanumeric data input by utilizing Input Device 210 (Fig. 1) or via voice recognition system are displayed on LCD 201 (S1). CPU 211 (Fig. 1) monitors each input, and if a phone number data is included therein (S2), CPU 211 stores the phone number data in Phone Number Data Storage Area 20647b1 (Fig. 971) (S3). CPU 211 displays the phone number data on LCD 201 with a phone number link (i.e., the phone number data is underlined and the font color thereof is changed to another color, such as blue) (S4).

[3362] Fig. 975 illustrates Phone Number Detecting Software 20647c3 stored in Phone Number Linking Software Storage Area 20647c (Fig. 972) which detects the phone number data included in a file, such as MS Word document and a text file, and displays the phone number data with a phone number link on LCD 201 (Fig. 1). Referring to the present drawing, a file, such as MS Word document and a

text file, is opened by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) scans the file and if a phone number data is included therein (S2), CPU 211 stores the phone number data in Phone Number Data Storage Area 20647b1 (Fig. 971) (S3). CPU 211 displays the phone number data on LCD 201 with a phone number link (i.e., the phone number data is underlined and the font color thereof is changed to another color, such as blue) (S4).

[3363] Fig. 976 illustrates Phone Number Displaying Software 20647c4 stored in Phone Number Linking Software Storage Area 20647c (Fig. 972) which displays the phone number data on LCD 201 (Fig. 1) when the phone number data associated with the phone number link by the operation of the software programs described in Figs. 973 through 975 is selected. Referring to the present drawing, a phone number with a phone number link is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) retrieves the phone number data from Phone Number Data Storage Area 20647b1 (Fig. 971) (2). CPU 211 then displays the retrieved phone number data on LCD 201 in a manner that the user of Communication Device 200 recognizes that the displayed

phone number data is ready to be dialed (3).

[3364] Fig. 977 illustrates Phone Number Dialing Software 20647c5 stored in Phone Number Linking Software Storage Area 20647c (Fig. 972) which dials utilizing the phone number data selected in S1 of Fig. 976 from Phone Number Data Storage Area 20647b1 (Fig. 971). Referring to the present drawing, CPU 211 (Fig. 1) retrieves the phone number data selected in S1 of Fig. 976 (S1). CPU 211 initiates dialing process (S2) and the line is connected with another communication device in a wireless fashion (S3).

[3365] Fig. 978 illustrates Phone Book Displaying Software 20647c6 stored in Phone Number Linking Software Storage Area 20647c (Fig. 972) which displays the list of phone numbers stored in Phone Number Data Storage Area 20647b1 (Fig. 971). Referring to the present drawing, a phone book opening signal indicating to open a phone book is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) retrieves all phone number data from Phone Number Data Storage Area 20647b1 (Fig. 971) (S2), and a list of phone number data is displayed on LCD 201 (Fig. 1) (S3).

[3366] Figs. 979 through 983 illustrate another embodiment of the present function which is a simplified version com-

pared to the one explained hereinbefore.

[3367] Fig. 979 illustrates another embodiment of Phone Number Detecting Software 20647c1 stored in Phone Number Linking Software Storage Area 20647c (Fig. 972) which detects the phone number data included in an e-mail and displays the phone number data with a phone number link on LCD 201 (Fig. 1). Referring to the present drawing, CPU 211 (Fig. 1) displays the received email on LCD 201 (S1). CPU 211 (Fig. 1) scans the email and if a phone number data is included therein (S2), CPU 211 stores the phone number data in Temporary Data Storage Area 20647b2 (Fig. 971) (S3). CPU 211 displays the phone number data on LCD 201 with a phone number link (i.e., the phone number data is underlined and the font color thereof is changed to another color, such as blue) (S4).

[3368] Fig. 980 illustrates another embodiment of Phone Number Detecting Software 20647c2 stored in Phone Number Linking Software Storage Area 20647c (Fig. 972) which detects the phone number data in real time included in a series of alphanumeric data input by utilizing Input Device 210 (Fig. 1) or via voice recognition system and displays the phone number data with a phone number link on LCD 201 (Fig. 1). Referring to the present drawing, a series of

alphanumeric data input by utilizing Input Device 210 (Fig. 1) or via voice recognition system are displayed on LCD 201 (S1). CPU 211 (Fig. 1) monitors each input, and if a phone number data is included therein (S2), CPU 211 stores the phone number data in Temporary Data Storage Area 20647b2 (Fig. 971) (S3). CPU 211 displays the phone number data on LCD 201 with a phone number link (i.e., the phone number data is underlined and the font color thereof is changed to another color, such as blue) (S4).

[3369] Fig. 981 illustrates another embodiment of Phone Number Detecting Software 20647c3 stored in Phone Number Linking Software Storage Area 20647c (Fig. 972) which detects the phone number data included in a file, such as MS Word document and a text file, and displays the phone number data with a phone number link on LCD 201 (Fig. 1). Referring to the present drawing, a file, such as MS Word document and a text file, is opened by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) scans the file and if a phone number data is included therein (S2), CPU 211 stores the phone number data in Temporary Data Storage Area 20647b2 (Fig. 971) (S3). CPU 211 displays the phone number data on LCD 201 with a phone number link (i.e., the phone

number data is underlined and the font color thereof is changed to another color, such as blue) (S4).

[3370] Fig. 982 illustrates another embodiment of Phone Number Displaying Software 20647c4 stored in Phone Number Linking Software Storage Area 20647c (Fig. 972) which displays the phone number data on LCD 201 (Fig. 1) when the phone number data associated with the phone number link by the operation of the software programs described in Figs. 979 through 971 is selected. Referring to the present drawing, a phone number with a phone number link is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) retrieves the phone number data from Temporary Data Storage Area 20647b2 (Fig. 971) (2). CPU 211 then displays the retrieved phone number data on LCD 201 in a manner that the user of Communication Device 200 recognizes that the displayed phone number data is ready to be dialed (3).

[3371] Fig. 983 illustrates another embodiment of Phone Number Dialing Software 20647c5 stored in Phone Number Linking Software Storage Area 20647c (Fig. 972) which dials utilizing the phone number data selected in S1 of Fig. 982. Referring to the present drawing, CPU 211 (Fig. 1) re-

trieves the phone number data selected in S1 of Fig. 982 from Temporary Data Storage Area 20647b2 (Fig. 971) (S1). CPU 211 initiates dialing process (S2) and the line is connected with another communication device in a wireless fashion (S3). The phone number data is deleted from Temporary Data Storage Area 20647b2 thereafter (S4).

[3372] *<<Phone Number Linking Function -- Summary>>*

[3373] (1) A communication device comprising a microphone, a speaker, a display, an input device and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and a phone number linking mode, a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, a phone number link is displayed with a phone number data on said display when said phone number linking mode is implemented.

[3374] (2) A communication device comprising a microphone, a speaker, a display, an input device and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and a phone number linking mode, a series of audio data are input to and output from said microphone and said speaker re-

spectively when said voice communication mode is implemented, a phone number link is displayed with a phone number data on said display and said communication device dials said phone number data after said phone number link is selected when said phone number linking mode is implemented.

[3375] (3) A phone number linking software program which enables a communication device comprising a microphone, a speaker, a display, an input device and a multiple mode implementor to display a phone number link with a phone number data on said display and said communication device to dial said phone number data after said phone number link is selected wherein said communication device is capable of inputting and outputting a series of audio data to and from said microphone and said speaker respectively.

[3376] *<<Multiple Window Displaying Function>>*

[3377] Figs. 984 through 995 illustrate the multiple window displaying function which displays a plurality of windows on LCD 201 (Fig. 1) of Communication Device 200.

[3378] Fig. 984 illustrates the concept of the present function. Referring to the present drawing, the display area of LCD 201 (Fig. 1) is primarily composed of two display areas,

i.e., Windows Display Area 20148WDA and Task Bar 20148TB. Windows Display Area 20148WDA is the display area where a plurality of windows are displayed. Task Bar 20148TB is the display area located on the lower part of LCD 201 (Fig. 1) where the icons corresponding to the windows displayed in Windows Display Area 20148WDA are displayed. In the example described in the present drawing, two windows area displayed in Windows Display Area 20148WDA, i.e., Window A and Window B. As described in the present drawing, Window A is displayed on top of Window B which means that Window A has priority over Window B. Two icons, i.e., Icon A which corresponds to Window A and Icon B are which corresponds to Window B are displayed in Task Bar 20148TB.

[3379] Fig. 985 illustrates the storage area included in RAM 206 (Fig. 1). As described in the present drawing, RAM 206 includes Multiple Window Displaying Information Storage Area 20648a of which the data and the software programs stored therein are described in Fig. 986.

[3380] The data and software programs stored in Multiple Window Displaying Information Storage Area 20648a (Fig. 985) are downloaded from Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[3381] Fig. 986 illustrates the storage areas included in Multiple Window Displaying Information Storage Area 20648a (Fig. 985). As described in the present drawing, Multiple Window Displaying Information Storage Area 20648a includes Multiple Window Displaying Data Storage Area 20648b and Multiple Window Displaying Software Storage Area 20648c. Multiple Window Displaying Data Storage Area 20648b stores the data necessary to implement the present function, such as the ones described in Figs. 987 through 989. Multiple Window Displaying Software Storage Area 20648c stores the software programs necessary to implement the present function, such as the ones described in Fig. 990.

[3382] Fig. 987 illustrates the storage area included in Multiple Window Displaying Data Storage Area 20648b (Fig. 986). As described in the present drawing, Multiple Window Displaying Data Storage Area 20648b includes Window Data Storage Area 20648b1 which is further explained in Figs. 988 and 989.

[3383] Fig. 988 illustrates the method to identify the location and the size of each window display in Windows Display Area 20148WDA (Fig. 984). Referring to the present drawing, Base Point 20148BP is the point of the upper-left corner

of Windows Display Area 20148WDA (Fig. 984). Reference Point 20148RP is the point of the upper-left corner of each window displayed in Windows Display Area 20148WDA. The location of Reference Point 20148RP in Windows Display Area 20148WDAis identified based on the distance from Base Point 20148BP in 'x cm, y cm' format. The size of each window is identified by the width and the height in centimeters.

[3384] Fig. 989 illustrates the data stored in Window Data Storage Area 20648b1 (Fig. 987). As described in the present drawing, Window Data Storage Area 20648b1comprises six columns, i.e., 'Window ID', 'Reference Point Data', 'Width Data', 'Height Data', 'Priority Data', and 'Icon ID'. Column 'Window ID' stores the identifications of the window data. Column 'Reference Point Data' stores Reference Point 20148RP (Fig. 988) of each window displayed in Windows Display Area 20148WDA (Fig. 988). Column 'Width Data' stores the width of each window in centimeters. Column 'Height Data' stores the height of each window in centimeters. Column 'Priority Data' stores the priority of each window displayed in Windows Display Area 20148WDA. Column 'Icon ID' stores the identifications of the icons displayed in Task Bar 20148TB (Fig. 984). In the

example described in the present drawing, the following data area stored in Window Data Storage Area 20648b1: the 'Window ID' 'Window #1' of which the 'Reference Point Data', the 'Width Data', the 'Height Data', the 'Priority Data', and the 'Icon ID' are '2cm, 3cm', '5cm', '2cm', 'Priority #4', and 'Icon #1'; the 'Window ID' 'Window #2' of which the 'Reference Point Data', the 'Width Data', the 'Height Data', the 'Priority Data', and the 'Icon ID' are '1cm, 2cm', '4cm', '4cm', 'Priority #3', and 'Icon #2'; the 'Window ID' 'Window #3' of which the 'Reference Point Data', the 'Width Data', the 'Height Data', the 'Priority Data', and the 'Icon ID' are '1cm, 2cm', '5cm', '6cm', 'Priority #2', and 'Icon #3'; and the 'Window ID' 'Window #4' of which the 'Reference Point Data', the 'Width Data', the 'Height Data', the 'Priority Data', and the 'Icon ID' are '2cm, 3cm', '4cm', '5cm', 'Priority #1', and 'Icon #4'.

[3385] Referring to the 'Priority Data', 'Window #4' has the highest priority over the rest of the windows in being displayed in Windows Display Area 20148WDA(i.e., 'Priority #1'), 'Window #3' has the priority over 'Window #2' and 'Window #1' in being displayed in Windows Display Area 20148WDA(i.e., 'Priority #2'), 'Window #2' has the priority over 'Window #1' in being displayed in Windows Display

Area 20148WDA(i.e., 'Priority #3'), and 'Window #1' has the lowest priority over the rest of the windows in being displayed in Windows Display Area 20148WDA(i.e., 'Priority #4').

[3386] Fig. 990 illustrates the software programs stored in Multiple Window Displaying Software Storage Area 20648c (Fig. 986). As described in the present drawing, Multiple Window Displaying Software Storage Area 20648c stores Window Generating Software 20648c1, Window Closing Software 20648c2, Window Size Changing Software 20648c3, Window Size Minimizing Software 20648c4, and Window Size Restoring Software 20648c5. Window Generating Software 20648c1 is the software program described in Fig. 991. Window Closing Software 20648c2 is the software program described in Fig. 992. Window Size Changing Software 20648c3 is the software program described in Fig. 993. Window Size Minimizing Software 20648c4 is the software program described in Fig. 994. Window Size Restoring Software 20648c5 is the software program described in Fig. 995.

[3387] Fig. 991 illustrates Window Opening Software 20648c1 stored in Multiple Window Displaying Software Storage Area 20648c (Fig. 990) which opens a new window in

Windows Display Area 20148WDA (Fig. 984) when a new software program (e.g., MS Word, MS Excel, MS Access, calculator, back-up software program, Windows Explorer, Outlook Express, image viewer, and Internet Explorer) is executed. Referring to the present drawing, when a software program is executed (S1), CPU 211 (Fig. 1) generates a new window data (S2). The size (i.e., the width and the height thereof) may be of the default settings. CPU 211 adds a new Window ID in Window Data Storage Area 20648b1 (Fig. 989) for the new window data (S3). CPU 211 further sets the highest 'Priority Data' (i.e., 'Priority #1') for the new window (S4), and stores the new window data generated in S2 as well as the 'Priority Data' set in S4 in Window Data Storage Area 20648b1 (S5). CPU 211 updates the 'Priority Data' of the other windows accordingly, i.e., the 'Priority Data' of the other windows are shifted to the one rank lower one and stores the updated 'Priority Data' in Window Data Storage Area 20648b1 (S6). CPU 211 displays the new window in Windows Display Area 20148WDA (Fig. 984) (S7) and the new icon on Task Bar 20148TB (Fig. 984) (S8).

[3388] Fig. 992 illustrates Window Closing Software 20648c2 stored in Multiple Window Displaying Software Storage

Area 20648c (Fig. 990) which closes the window displayed in Windows Display Area 20148WDA (Fig. 984) when the corresponding software program is terminated. Referring to the present drawing, when a software program is terminated (S1), CPU 211 (Fig. 1) deletes the corresponding window data from Window Data Storage Area 20648b1 (Fig. 989) (S2). CPU 211 then closes the corresponding window displayed on Windows Display Area 20148WDA (Fig. 984) (S3) and erases the corresponding icon from Task Bar 20148TB (Fig. 984) (S4). CPU 211 updates the 'Priority Data' of the other windows accordingly, i.e., the 'Priority Data' of the other windows are shifted to the one rank higher one and stores the updated 'Priority Data' in Window Data Storage Area 20648b1 (S5).

[3389] Fig. 993 illustrates Window Size Changing Software 20648c3 stored in Multiple Window Displaying Software Storage Area 20648c (Fig. 990) which changes the size of the window displayed in Windows Display Area 20148WDA (Fig. 984). Referring to the present drawing, a certain window is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). A window size changing signal which indicates to change the size of the window displayed in Windows Display Area 20148WDA is input in

the same manner (S2). CPU 211 (Fig. 1), by identifying the information contained in the window size changing signal, updates and stores the renewed window data (with new 'Reference Point Data', 'Width Data', and 'Height Data') in Window Data Storage Area 20648b1 (Fig. 989) (S3). The window with the renewed size is displayed in Windows Display Area 20148WDA thereafer (S4).

[3390] Fig. 994 illustrates Window Size Minimizing Software 20648c4 stored in Multiple Window Displaying Software Storage Area 20648c (Fig. 990) which minimizes the size of the window to zero displayed in Windows Display Area 20148WDA (Fig. 984). Referring to the present drawing, a certain window is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). A window size minimizing signal which indicates to minimize the size of the window displayed in Windows Display Area 20148WDA is input in the same manner (S2). The window data of the corresponding window remains unchanged except the 'Priority Data'. The 'Priority Data' of the minimized window is shifted to the lowest one (S3). CPU 211 (Fig. 1) updates the 'Priority Data' of the other windows accordingly, i.e., the 'Priority Data' of the other windows are shifted to the one rank higher one and stores the updated 'Priority Data'

in Window Data Storage Area 20648b1 (Fig. 989) (S4). The size of the window displayed in Windows Display Area 20148WDA is minimized thereafter (S5).

[3391] Fig. 995 illustrates Window Size Restoring Software 20648c5 stored in Multiple Window Displaying Software Storage Area 20648c (Fig. 990) which restores the size of the window minimized by Window Size Minimizing Software 20648c4 (Fig. 994) to its original size. Referring to the present drawing, a certain window is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). A window size restoring signal which indicates to restore the size of the window displayed in Windows Display Area 20148WDA is input in the same manner (S2). CPU 211 (Fig. 1), by identifying the information contained in the window size restoring signal, retrieves the window data (i.e., 'Reference Point Data', 'Width Data', and 'Height Data') from Window Data Storage Area 20648b1 (Fig. 989) (S3). CPU 211 sets the highest 'Priority Data' (i.e., 'Priority #1') for the restored window (S4), and stores the data in Window Data Storage Area 20648b1 (S4). CPU 211 further updates the 'Priority Data' of the other windows accordingly, i.e., the 'Priority Data' of the other windows are shifted to the one rank lower one and

stores the updated 'Priority Data' in Window Data Storage Area 20648b1 (S5). The window size is restored thereafter (S6).

[3392] *<<Multiple Window Displaying Function -- Summary>>*

[3393] (1) A communication device comprising a microphone, a speaker, a display, an input device and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and a multiple window displaying mode, a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, a multiple windows are displayed on said display when said multiple window displaying mode is implemented.

[3394] (2) A multiple window displaying software program which displays a multiple windows on a display of a communication device which implements a voice communication mode wherein a series of audio data are input to and output from a microphone and a speaker respectively of said communication mode in a wireless fashion when said voice communication mode is implemented.

[3395] *<<Mouse Pointer Displaying Function>>*

[3396] Figs. 996 through 1021 illustrate the mouse pointer displaying function which displays on LCD 201 (Fig. 1) of Communication Device 200 a mouse pointer which is manipulated by the user of Communication Device 200. The mouse pointer is primarily utilized to select, open, close, drag & drop files, and its image is similar to the one displayed on ordinary personal computers.

[3397] Fig. 996 illustrates the storage area included in RAM 206 (Fig. 1). As described in the present drawing, RAM 206 includes Mouse Pointer Displaying Information Storage Area 20649a of which the data and the software programs stored therein are described in Fig. 997.

[3398] The data and software programs stored in Mouse Pointer Displaying Information Storage Area 20649a (Fig. 996) are downloaded from Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[3399] Fig. 997 illustrates the storage areas included in Mouse Pointer Displaying Information Storage Area 20649a (Fig. 996). As described in the present drawing, Mouse Pointer Displaying Information Storage Area 20649a includes Mouse Pointer Displaying Data Storage Area 20649b and Mouse Pointer Displaying Software Storage Area 20649c. Mouse Pointer Displaying Data Storage Area 20649b

stores the data necessary to implement the present function, such as the ones described in Figs. 998 through 1000. Mouse Pointer Displaying Software Storage Area 20649c stores the software programs necessary to implement the present function, such as the ones described in Fig. 1001.

[3400] Fig. 998 illustrates the storage areas included in Mouse Pointer Displaying Data Storage Area 20649b (Fig. 997). As described in the present drawing, Mouse Pointer Displaying Data Storage Area 20649b includes Mouse Pointer Image Data Storage Area 20649b1 and Current Pointer Data Storage Area 20649b2. Mouse Pointer Image Data Storage Area 20649b1 stores the data described in Fig. 999. Current Pointer Data Storage Area 20649b2 stores the data described in Fig. 1000.

[3401] Fig. 999 illustrates the data stored in Mouse Pointer Image Data Storage Area 20649b1 (Fig. 998). As described in the present drawing, Mouse Pointer Image Data Storage Area 20649b1 comprises two columns, i.e., 'Pointer ID' and 'Pointer Image Data'. Column 'Pointer ID' stores the pointer IDs, i.e., the identifications of the pointer image data stored in column 'Pointer Image Data', and column 'Pointer Image Data' stores the pointer image data de-

signed to be displayed on LCD 201 (Fig. 1). The pointer image data stored in column 'Pointer Image Data' in the present example are the following: Pointer Image Data #1 which is a small white arrow, Pointer Image Data #2 which is a large white arrow, Pointer Image Data #3 which is a small black arrow, and Pointer Image Data #4 which is a large black arrow. Pointer #1 is the identification of Pointer Image Data #1, Pointer #2 is the identification of Pointer Image Data #2, Pointer #3 is the identification of Pointer Image Data #3, and Pointer #4 is the identification of Pointer Image Data #4.

[3402] Fig. 1000 illustrates the data stored in Current Pointer Data Storage Area 20649b2 (Fig. 998). As described in the present drawing, Current Pointer Data Storage Area 20649b2 comprises two columns, i.e., 'Selected Pointer ID' and 'Current Location Data'. 'Selected Pointer ID' stores the pointer IDs of the pointer image data selected in S3 of Fig. 1002. Column 'Current Location Data' stores the current location data which represents the location of the mouse pointer displayed on LCD 201 (Fig. 1). The current location data is stored in (x cm, y cm) format wherein 'x cm' represents the distance from the base point located on the upper left corner (not described in the drawing) of

LCD 201 on x axis in centimeters, and 'y cm' represents the distance from the base point on y axis in centimeters. In the example described in the present drawing, the pointer ID 'Pointer #1' is stored in column 'Selected Pointer ID' and the current location data (2cm, 3cm) is stored in column 'Current Location Data'. Referring to Fig. 999, Pointer Image Data #1 (i.e., a small white arrow) of which the pointer ID is 'Pointer #1' is displayed on LCD 201 at the location of 2cm from the base point on x axis and 3cm from the base point on y axis.

[3403] Fig. 1001 illustrates the software programs stored in Mouse Pointer Displaying Software Storage Area 20649c (Fig. 997). As described in the present drawing, Mouse Pointer Displaying Software Storage Area 20649c stores Mouse Pointer Image Data Selecting Software 20649c1, Mouse Pointer Moving Software 20649c2, Mouse Pointer Displaying Software 20649c3, VRS Pointer Moving Signal Producing Software 20649c4, Keypad Pointer Moving Signal Producing Software 20649c5, Joystick Pointer Moving Signal Producing Software 20649c6, and ETS Pointer Moving Signal Producing Software 20649c7. Mouse Pointer Image Data Selecting Software 20649c1 is the software program described in Fig. 1002. Mouse Pointer Moving

Software 20649c2 is the software program described in Fig. 1003. Mouse Pointer Displaying Software 20649c3 is the software program described in Fig. 1004. VRS Pointer Moving Signal Producing Software 20649c4 is the software program described in Figs. 1005 through 1008. Keypad Pointer Moving Signal Producing Software 20649c5 is the software program described in Figs. 1009 through 1012. Joystick Pointer Moving Signal Producing Software 20649c6 is the software program described in Figs. 1013 through 1016. ETS Pointer Moving Signal Producing Software 20649c7 is the software program described in Figs. 1017 through 1020.

[3404] Fig. 1002 illustrates Mouse Pointer Image Data Selecting Software 20649c1 stored in Mouse Pointer Displaying Software Storage Area 20649c (Fig. 1001) which selects the mouse pointer image data from a list displayed on LCD 201 (Fig. 1). Referring to the present drawing, CPU 211 (Fig. 1) retrieves all pointer image data from Mouse Pointer Image Data Storage Area 20649b1 (Fig. 999) (S1) and displays a list thereof on LCD 201 (S2). A mouse pointer image data is selected from the list by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S3), and CPU 211 stores the corresponding pointer ID in

column 'Selected Pointer ID' of Current Pointer Data Storage Area 20649b2 (Fig. 1000) (S4).

[3405] Fig. 1003 illustrates Mouse Pointer Moving Software 20649c2 stored in Mouse Pointer Displaying Software Storage Area 20649c (Fig. 1001) which updates the current location data stored in Current Pointer Data Storage Area 20649b2 (Fig. 1000) when mouse pointer moving signal is input. Referring to the present drawing, a mouse pointer moving signal indicating to move the mouse pointer displayed on LCD 201 (Fig. 1) to a new location is input by the method described hereinafter (S1). CPU 211 (Fig. 1) then calculates the new location where the mouse pointer is to be displayed (S2), and stores the new current location data in 'Current Location Data' of Current Pointer Data Storage Area 20649b2 (Fig. 1000) (S3).

[3406] Fig. 1004 illustrates Mouse Pointer Displaying Software 20649c3 stored in Mouse Pointer Displaying Software Storage Area 20649c (Fig. 1001) which displays the mouse pointer on LCD 201 (Fig. 1). Referring to the present drawing, CPU 211 (Fig. 1) retrieves the pointer ID from column 'Selected Pointer ID' of Current Pointer Data Storage Area 20649b2 (Fig. 1000) (S1). CPU 211 then retrieves the corresponding pointer image data from Mouse

Pointer Image Data Storage Area 20649b1 (Fig. 999) (S2). CPU 211 further retrieves the current location data from column 'Current Location Data' of Current Pointer Data Storage Area 20649b2 (Fig. 1000) (S3). Based on the data retrieved in S1 through S3, CPU 211 displays the pointer image data on LCD 201 in accordance with the current location data (S4).

[3407] The software programs described in Figs. 1003 and 1004 are repeated periodically, preferably sixty times every second.

[3408] Fig. 1005 illustrates VRS Pointer Moving Signal Producing Software 20649c4 stored in Mouse Pointer Displaying Software Storage Area 20649c (Fig. 1001) which produces the mouse pointer moving signal described in S1 of Fig. 1003 indicating to move up the mouse pointer by utilizing the voice recognition system described hereinbefore. Referring to the present drawing, a voice command 'move up' is input via Microphone 215 (Fig. 1) (S1). In response to the voice command, CPU 211 (Fig. 1) produces the mouse pointer moving signal indicating to move up the mouse pointer (S2).

[3409] Fig. 1006 illustrates VRS Pointer Moving Signal Producing Software 20649c4 stored in Mouse Pointer Displaying

Software Storage Area 20649c (Fig. 1001) which produces the mouse pointer moving signal described in S1 of Fig. 1003 indicating to move down the mouse pointer by utilizing the voice recognition system described hereinbefore. Referring to the present drawing, a voice command 'move down' is input via Microphone 215 (Fig. 1) (S1). In response to the voice command, CPU 211 (Fig. 1) produces the mouse pointer moving signal indicating to move down the mouse pointer (S2).

[3410] Fig. 1007 illustrates VRS Pointer Moving Signal Producing Software 20649c4 stored in Mouse Pointer Displaying Software Storage Area 20649c (Fig. 1001) which produces the mouse pointer moving signal described in S1 of Fig. 1003 indicating to move left the mouse pointer by utilizing the voice recognition system described hereinbefore. Referring to the present drawing, a voice command 'move left' is input via Microphone 215 (Fig. 1) (S1). In response to the voice command, CPU 211 (Fig. 1) produces the mouse pointer moving signal indicating to move left the mouse pointer (S2).

[3411] Fig. 1008 illustrates VRS Pointer Moving Signal Producing Software 20649c4 stored in Mouse Pointer Displaying Software Storage Area 20649c (Fig. 1001) whichproduces

the mouse pointer moving signal described in S1 of Fig. 1003 indicating to move right the mouse pointer by utilizing the voice recognition system described hereinbefore. Referring to the present drawing, a voice command 'move right' is input via Microphone 215 (Fig. 1) (S1). In response to the voice command, CPU 211 (Fig. 1) produces the mouse pointer moving signal indicating to move right the mouse pointer (S2).

[3412] Fig. 1009 illustrates Keypad Pointer Moving Signal Producing Software 20649c5 stored in Mouse Pointer Displaying Software Storage Area 20649c (Fig. 1001) which produces the mouse pointer moving signal described in S1 of Fig. 1003 indicating to move up the mouse pointer by utilizing the keypad, i.e., Numeric Data Input Device 21000a (Fig. 647). Referring to the present drawing, numeric data '8' is input via keypad, i.e., Numeric Data Input Device 21000a (Fig. 647) (S1). In response to the input numeric data, CPU 211 (Fig. 1) produces the mouse pointer moving signal indicating to move up the mouse pointer (S2).

[3413] Fig. 1010 illustrates Keypad Pointer Moving Signal Producing Software 20649c5 stored in Mouse Pointer Displaying Software Storage Area 20649c (Fig. 1001) which

produces the mouse pointer moving signal described in S1 of Fig. 1003 indicating to move down the mouse pointer by utilizing the keypad, i.e., Numeric Data Input Device 21000a (Fig. 647). Referring to the present drawing, numeric data '2' is input via keypad, i.e., Numeric Data Input Device 21000a (Fig. 647) (S1). In response to the input numeric data, CPU 211 (Fig. 1) produces the mouse pointer moving signal indicating to move down the mouse pointer (S2).

[3414] Fig. 1011 illustrates Keypad Pointer Moving Signal Producing Software 20649c5 stored in Mouse Pointer Displaying Software Storage Area 20649c (Fig. 1001) which produces the mouse pointer moving signal described in S1 of Fig. 1003 indicating to move left the mouse pointer by utilizing the keypad, i.e., Numeric Data Input Device 21000a (Fig. 647). Referring to the present drawing, numeric data '4' is input via keypad, i.e., Numeric Data Input Device 21000a (Fig. 647) (S1). In response to the input numeric data, CPU 211 (Fig. 1) produces the mouse pointer moving signal indicating to move left the mouse pointer (S2).

[3415] Fig. 1012 illustrates Keypad Pointer Moving Signal Producing Software 20649c5 stored in Mouse Pointer Dis-

playing Software Storage Area 20649c (Fig. 1001) which produces the mouse pointer moving signal described in S1 of Fig. 1003 indicating to move right the mouse pointer by utilizing the keypad, i.e., Numeric Data Input Device 21000a (Fig. 647). Referring to the present drawing, numeric data '6' is input via keypad, i.e., Numeric Data Input Device 21000a (Fig. 647) (S1). In response to the input numeric data, CPU 211 (Fig. 1) produces the mouse pointer moving signal indicating to move right the mouse pointer (S2).

[3416] Fig. 1013 illustrates Joystick Pointer Moving Signal Producing Software 20649c6 stored in Mouse Pointer Displaying Software Storage Area 20649c (Fig. 1001) which produces the mouse pointer moving signal described in S1 of Fig. 1003 indicating to move up the mouse pointer by utilizing Joystick 21000d (Fig. 646). Referring to the present drawing, Joystick 21000d is shifted up (S1). In response thereto, CPU 211 (Fig. 1) produces the mouse pointer moving signal indicating to move up the mouse pointer (S2).

[3417] Fig. 1014 illustrates Joystick Pointer Moving Signal Producing Software 20649c6 stored in Mouse Pointer Displaying Software Storage Area 20649c (Fig. 1001) which

produces the mouse pointer moving signal described in S1 of Fig. 1003 indicating to move down the mouse pointer by utilizing Joystick 21000d (Fig. 646). Referring to the present drawing, Joystick 21000d is shifted down (S1). In response thereto, CPU 211 (Fig. 1) produces the mouse pointer moving signal indicating to move down the mouse pointer (S2).

[3418] Fig. 1015 illustrates Joystick Pointer Moving Signal Producing Software 20649c6 stored in Mouse Pointer Displaying Software Storage Area 20649c (Fig. 1001) which produces the mouse pointer moving signal described in S1 of Fig. 1003 indicating to move left the mouse pointer by utilizing Joystick 21000d (Fig. 646). Referring to the present drawing, Joystick 21000d is shifted left (S1). In response thereto, CPU 211 (Fig. 1) produces the mouse pointer moving signal indicating to move left the mouse pointer (S2).

[3419] Fig. 1016 illustrates Joystick Pointer Moving Signal Producing Software 20649c6 stored in Mouse Pointer Displaying Software Storage Area 20649c (Fig. 1001) which produces the mouse pointer moving signal described in S1 of Fig. 1003 indicating to move right the mouse pointer by utilizing Joystick 21000d (Fig. 646). Referring

to the present drawing, Joystick 21000d is shifted right (S1). In response thereto, CPU 211 (Fig. 1) produces the mouse pointer moving signal indicating to move right the mouse pointer (S2).

[3420] Fig. 1017 illustrates ETS Pointer Moving Signal Producing Software 20649c7 stored in Mouse Pointer Displaying Software Storage Area 20649c (Fig. 1001) which produces the mouse pointer moving signal described in S1 of Fig. 1003 indicating to move up the mouse pointer by utilizing the eye tracking system. Here, the eye tracking system is a system to move the mouse pointer displayed on LCD 201 (Fig. 1) by utilizing the eye of the user of Communication Device 200. By utilizing this system, CPU 211 (Fig. 1) periodically monitors the movement of the eyes of the user of Communication Device 200, and the mouse pointer automatically moves to the location at which he/she is currently gazing. The mechanism of the eye tracking system is introduced in the following inventions and the references cited thereof: U.S. Pat. No. 6,459,446; U.S. Pat. No. 6,394,602; U.S. Pat. No. 6,381,339; U.S. Pat. No. 6,373,961; U.S. Pat. No. 6,359,601; U.S. Pat. No. 5,926,251; U.S. Pat. No. 5,861,940; U.S. Pat. No. 5,859,686; U.S. Pat. No. 5,638,176; U.S. Pat. No.

5,635,947; U.S. Pat. No. 5,583,335; U.S. Pat. No. 5,491,492; U.S. Pat. No. 5,481,622; U.S. Pat. No. 5,430,505; U.S. Pat. No. 5,410,376; U.S. Pat. No. 5,345,281; U.S. Pat. No. 5,331,149; U.S. Pat. No. 5,270,748; U.S. Pat. No. 5,231,674; and U.S. Pat. No. 4,376,309. The eye tracking system may be implemented by utilizing CCD Unit 214 (Fig. 1) or an eye tracking unit may be installed in Communication Device 200 to implement the system. For the avoidance of doubt, the eye tracking system may be implemented by either a hardware unit or a software program program.

[3421] Referring to the present drawing, the user of Communication Device 200 rolls up his/her eyes, which is detected by the eye tracking system (S1). CPU 211 (Fig. 1), in response thereto, produces the mouse pointer moving signal indicating to move up the mouse pointer (S2).

[3422] Fig. 1018 illustrates ETS Pointer Moving Signal Producing Software 20649c7 stored in Mouse Pointer Displaying Software Storage Area 20649c (Fig. 1001) which produces the mouse pointer moving signal described in S1 of Fig. 1003 indicating to move down the mouse pointer by utilizing the eye tracking system. Referring to the present drawing, the user of Communication Device 200 rolls

down his/her eyes, which is detected by the eye tracking system (S1). CPU 211 (Fig. 1), in response thereto, produces the mouse pointer moving signal indicating to move down the mouse pointer (S2).

[3423] Fig. 1019 illustrates ETS Pointer Moving Signal Producing Software 20649c7 stored in Mouse Pointer Displaying Software Storage Area 20649c (Fig. 1001) which produces the mouse pointer moving signal described in S1 of Fig. 1003 indicating to move left the mouse pointer by utilizing the eye tracking system. Referring to the present drawing, the user of Communication Device 200 rolls left his/her eyes, which is detected by the eye tracking system (S1). CPU 211 (Fig. 1), in response thereto, produces the mouse pointer moving signal indicating to move left the mouse pointer (S2).

[3424] Fig. 1020 illustrates ETS Pointer Moving Signal Producing Software 20649c7 stored in Mouse Pointer Displaying Software Storage Area 20649c (Fig. 1001) which produces the mouse pointer moving signal described in S1 of Fig. 1003 indicating to move right the mouse pointer by utilizing the eye tracking system. Referring to the present drawing, the user of Communication Device 200 rolls right his/her eyes, which is detected by the eye tracking

system (S1). CPU 211 (Fig. 1), in response thereto, produces the mouse pointer moving signal indicating to move right the mouse pointer (S2).

[3425] Fig. 1021 illustrates a different embodiment of Mouse Pointer Moving Software 20649c2 stored in Mouse Pointer Displaying Software Storage Area 20649c (Fig. 1001) which is executed in combination of eye tracking system explained hereinbefore. Referring to the present drawing, CPU 211 (Fig. 1), by utilizing the eye tracking system, determines the location on LCD 201 (Fig. 1) at which the user of Communication Device 200 is currently gazing (S1). CPU 211 then determines the new location where the mouse pointer is to be displayed (S2), and stores the new and updated current location data in 'Current Location Data' of Current Pointer Data Storage Area 20649b2 (Fig. 1000) (S3).

[3426] *<<Mouse Pointer Displaying Function -- Summary>>*

[3427] (1) A communication device comprising a microphone, a speaker, a display, an input device and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and a mouse pointer displaying mode, a series of audio data are input to and output from said microphone and said speaker re-

spectively when said voice communication mode is implemented, a mouse pointer which is manipulable by the user of said communication device is displayed on said display when said mouse pointer displaying modeis implemented.

[3428] (2) A mouse pointer displaying software program which displays a mouse pointer on a display of a communication device which implements a voice communication mode wherein said mouse pointer is manipulable by the user of said communication device and a series of audio data are input to and output from a microphone and a speaker respectively of said communication device in a wireless fashion when said voice communication mode is implemented.

[3429] (3) Said mouse pointer is manipulated by a voice recognition system.

[3430] (4) Said mouse pointer is manipulated by a keypad.

[3431] (5) Said mouse pointer is manipulated by a joystick.

[3432] (6) Said mouse pointer is manipulated by an eye tracking system.

[3433] *<<House Item Pin-pointing Function>>*

[3434] Figs. 1022 through 1152 illustrate the house item pin-pointing function which enables the user of Communica-

tion Device 200 to find the location of the house items for which he/she is looking in a house. Here, the house items are the tangible objects placed in a house which are movable by human being, such as a pair of glasses, a book, a pen, and a nail clipper. A small transmitter is attached to or embedded in a house item, and the location thereof is displayed on LCD 201 (Fig. 1) of Communication Device 200. For the avoidance of doubt, the present function is applicable for finding the locations of other items, such as LCD 201L (Fig. 467b), LCD 201R (Fig. 467b), Speaker 216L (Fig. 467c), and Speaker 216R (Fig. 467c) described hereinbefore.

[3435] Fig. 1022 illustrates the relationship between Glasses 50GL and Wireless Transmitter 50GLa. Glasses 50GL is a pair of glasses, and Wireless Transmitter 50GLa is a small wireless transmitter which respectively sends and receives wireless signals. As described in the present drawing, Wireless Transmitter 50GLa is attached to Glasses 50GL. As another embodiment, Wireless Transmitter 50GLa may be embedded in Glasses 50GL.

[3436] Fig. 1023 illustrates the relationship between Book 50BK and Wireless Transmitter 50BKa. Book 50BK is a book, and Wireless Transmitter 50BKa is a small wireless transmitter

which respectively sends and receives wireless signals. As described in the present drawing, Wireless Transmitter 50BKa is attached to Book 50BK. As another embodiment, Wireless Transmitter 50BKa may be embedded in Book 50BK.

[3437] Fig. 1024 illustrates the relationship between Pen 50PN and Wireless Transmitter 50PNa. Pen 50PN is a pen, and Wireless Transmitter 50PNa is a small wireless transmitter which respectively sends and receives wireless signals. As described in the present drawing, Wireless Transmitter 50PNa is attached to Pen 50PN. As another embodiment, Wireless Transmitter 50PNa may be embedded in Pen 50PN.

[3438] Fig. 1025 illustrates the relationship between Nail Clipper 50NC and Wireless Transmitter 50NCa. Nail Clipper 50NC is a nail clipper, and Wireless Transmitter 50NCa is a small wireless transmitter which respectively sends and receives wireless signals. As described in the present drawing, Wireless Transmitter 50NCa is attached to Nail Clipper 50NC. As another embodiment, Wireless Transmitter 50NCa may be embedded in Nail Clipper 50NC.

[3439] Fig. 1026 illustrates the layout of House 50HS in which the house items described in Figs. 1022 through 1025 are

placed. House 50HS, in the present example, comprises four rooms, i.e., Room A, Room B, Room C, and Room D. As described in the present drawing, Glasses 50GL is placed in Room A, Book 50BK is placed in Room B, Pen 50PN is placed in Room C, and Nail Clipper 50NC is placed in Room D. Communication Device 200 is placed in Room A.

[3440] Fig. 1027 illustrates the relays which send and receive wireless signals installed in Room A (Fig. 1026). As described in the present drawing, four relays are installed in Room A, i.e., R50A1, R50A2, R50A3, and R50A4.

[3441] Fig. 1028 illustrates the relays which send and receive wireless signals installed in Room B (Fig. 1026). As described in the present drawing, four relays are installed in Room B, i.e., R50B1, R50B2, R50B3, and R50B4.

[3442] Fig. 1029 illustrates the relays which send and receive wireless signals installed in Room C (Fig. 1026). As described in the present drawing, four relays are installed in Room C, i.e., R50C1, R50C2, R50C3, and R50C4.

[3443] Fig. 1030 illustrates the relays which send and receive wireless signals installed in Room D (Fig. 1026). As described in the present drawing, four relays are installed in Room D, i.e., R50D1, R50D2, R50D3, and R50D4.

[3444] Fig. 1031 illustrates the relationship between Host H (Fig. 429) and the relays described in Figs. 1027 through 1030. As described in the present drawing, Host H and the relays are connected via Network NT, such as the Internet.

[3445] Fig. 1032 illustrates another embodiment of the relationship between Host H (Fig. 429) and the relays described in Figs. 1027 through 1030. As described in the present drawing, Host H and the relays are connected via Network NT, such as the Internet, and Sub-Host SH. Sub-Host SH transfers signals received from Host H to the relays and transfers signals received from the relays to Host H via Network NT. As another embodiment, Sub-Host SH may conduct all roles of Host H described hereinafter.

[3446] Fig. 1033 illustrates the layout of House 50HS (Fig. 1026) displayed on LCD 201 (Fig. 1). House 50HS displayed on LCD 201 is composed of four rooms, i.e., Room A, Room B, Room C, and Room D. As described in the present drawing, Room A is adjacent to Room B and C, Room B is adjacent to Room A and D, Room C is adjacent to Room A and D, and Room D is adjacent to Room B and C. Assuming that Glasses 50GL is placed in Room A, Book 50BK is placed in Room B, Pen 50PN is placed in Room C, Nail Clipper 50NC is placed in Room D, and Communication

Device 200 is placed in Room A. As described in the present drawing, LCD 201 shows that Glasses 50GL is placed in Room A, Book 50BK is placed in Room B, Pen 50PN is placed in Room C, and Nail Clipper 50NC is placed in Room D. LCD 201 also shows that Communication Device 200 is placed in Room A.

[3447] Fig. 1034 illustrates Room A displayed on LCD 201 (Fig. 1). As described in the present drawing, LCD 201 shows that Glasses 50GL is placed in Room A and also the location thereof in Room A. LCD 201 also shows that Communication Device 200 is placed in Room A and also the location thereof in Room A.

[3448] Fig. 1035 illustrates Room B displayed on LCD 201 (Fig. 1). As described in the present drawing, LCD 201 shows that Book 50BK is placed in Room B and also the location thereof in Room B.

[3449] Fig. 1036 illustrates Room C displayed on LCD 201 (Fig. 1). As described in the present drawing, LCD 201 shows that Pen 50PN is placed in Room C and also the location thereof in Room C.

[3450] Fig. 1037 illustrates Room D displayed on LCD 201 (Fig. 1). As described in the present drawing, LCD 201 shows that Nail Clipper 50NC is placed in Room D and also the

location thereof in Room D.

[3451] Fig. 1038 illustrates the storage area included in Host H (Fig. 429). As described in the present drawing, Host H includes House Item Pin-pointing Information Storage Area H50a of which the data and the software programs stored therein are described in 1039.

[3452] Fig. 1039 illustrates the storage areas included in House Item Pin-pointing Information Storage Area H50a (Fig. 1038). As described in the present drawing, House Item Pin-pointing Information Storage Area H50a includes House Item Pin-pointing Data Storage Area H50b and House Item Pin-pointing Software Storage Area H50c. House Item Pin-pointing Data Storage Area H50b stores the data necessary to implement the present function on the side of Host H (Fig. 429), such as the ones described in Figs. 1040 through 1047. House Item Pin-pointing Software Storage Area H50c stores the software programs necessary to implement the present function on the side of Host H (Fig. 429), such as the ones described in Fig. 1048.

[3453] Fig. 1040 illustrates the storage areas included in House Item Pin-pointing Data Storage Area H50b (Fig. 1039). As described in the present drawing, House Item Pin-

pointing Data Storage Area H50b includes House Data Storage Area H50b1, Work Area H50b2, Selected House Item ID Storage Area H50b3, and Selected Com. Device ID Storage Area H50b4. House Data Storage Area H50b1 is the storage area described in Fig. 1041. Work Area H50b2 is a storage area utilized for Host H (Fig. 429) to perform calculation and to temporarily store data. Selected House Item ID Storage Area H50b3 stores the identification of the house displayed on LCD 201 (Fig. 1) by implementing the present function. Selected Com. Device ID Storage Area H50b4 stores the identification of Communication Device 200 displayed on LCD 201 (Fig. 1) by implementing the present function.

[3454] Fig. 1041 illustrates the storage areas included in House Data Storage Area H50b1 (Fig. 1040). As described in the present drawing, House Data Storage Area H50b1 includes House#1 Data Storage Area H50b1a, House#2 Data Storage Area H50b1b, and House#3 Data Storage Area H50b1c. House#1 Data Storage Area H50b1a stores the house data of house #1. House#2 Data Storage Area H50b1b stores the house data of house #2. House#3 Data Storage Area H50b1c stores the house data of house #3. Here, houses #1 through #3 are the identifications of the

houses of which the layouts and the rooms thereof, and the house items placed therein are displayed on LCD 201 (Fig. 1) by implementing the present function. The house data stored in each storage area are explained in Fig. 1042 by taking House#1 Data Storage Area H50b1a as an example.

[3455] Fig. 1042 illustrates the data stored in House#1 Data Storage Area H50b1a (Fig. 1041). House#1 Data Storage Area H50b1a stores the house data of house #1. As described in the present drawing, House#1 Data Storage Area H50b1a stores House Relay Location Data H50b1a1, Com. Device Location Data Storage Area H50b1a2, House Layout Data Storage Area H50b1a3, Room Layout Data Storage Area H50b1a4, House Item Icon Image Data Storage Area H50b1a5, and Com. Device Icon Image Data Storage Area H50b1a6. House Relay Location Data H50b1a1 is the data described in Fig. 1045. Com. Device Location Data Storage Area H50b1a2 stores the communication device location data representing the location of Communication Device 200. House Layout Data Storage Area H50b1a3 stores the data described in Fig. 1043. Room Layout Data Storage Area H50b1a4 stores the data described in Fig. 1044. House Item Icon Image Data Stor-

age Area H50b1a5 stores the data described in Fig. 1046. Com. Device Icon Image Data Storage Area H50b1a6 stores the data described in Fig. 1047.

[3456] Fig. 1043 illustrates the house layout data stored in House Layout Data Storage Area H50b1a3 (Fig. 1042). House Layout Data Storage Area H50b1a3 stores the house layout data which represents the layout of house #1. Referring to the present drawing, the house layout data stored in House Layout Data Storage Area H50b1a3 represents the layout of House #1 which is composed of four rooms, i.e., Room A, Room B, Room C, and Room D. Room A is adjacent to Room B and C, Room B is adjacent to Room A and D, Room C is adjacent to Room A and D, and Room D is adjacent to Room B and C.

[3457] Fig. 1044 illustrates the room layout data stored in Room Layout Data Storage Area H50b1a4 (Fig. 1042). As described in the present drawing, Room Layout Data Storage Area H50b1a4 comprises two columns, i.e., "Room ID" and "Room Layout Data". Column "Room ID" stores the room IDs which are the identifications of the room layout data stored in column "Room Layout Data". Here, the room layout data is the data representing the layout of the room. In the example described in the present drawing,

Column "Room Layout Data" stores the room layout data of each room included in house #1, i.e., Room A, Room B, Room C, and Room D. Referring to the present drawing, Room Layout Data Storage Area H50b1a4 (Fig. 1042) stores the following data: the room ID 'Room A' of which the room layout data is 'Room Layout Data 50RLD1'; the room ID 'Room B' of which the room layout data is 'Room Layout Data 50RLD2'; the room ID 'Room C' of which the room layout data is 'Room Layout Data 50RLD3'; and the room ID 'Room D' of which the room layout data is 'Room Layout Data 50RLD4'.

[3458] Fig. 1045 illustrates the data stored in House Relay Location Data H50b1a1 (Fig. 1042). As described in the present drawing, House Relay Location Data H50b1a1 comprises four columns, i.e., "House ID", "Room ID", "Relay ID", and "Relay Location Data". Column "House ID" stores the house ID which is the identification of house #1. Column "Room ID" stores the room IDs which are the identifications of the rooms included in house #1. Column "Relay ID" stores the relay IDs which are the identifications of the relays installed in each room. Column "Relay Location Data" stores the relay location data which represents the location of each relay. In the example described in the

present drawing, the relay IDs R50A1 through R50A4 installed in Room A are stored in column 'Relay ID' of which the corresponding relay location data are stored in column "Relay Location Data" in (x, y, z) format; the relay IDs R50B1 through R50B4 installed in Room B are stored in column 'Relay ID' of which the corresponding relay location data are stored in column "Relay Location Data" in (x, y, z) format; the relay IDs R50C1 through R50C4 installed in Room C are stored in column 'Relay ID' of which the corresponding relay location data are stored in column "Relay Location Data" in (x, y, z) format; and the relay IDs R50D1 through R50D4 installed in Room D are stored in column 'Relay ID' of which the corresponding relay location data are stored in column "Relay Location Data" in (x, y, z) format.

[3459] Fig. 1046 illustrates the data stored in House Item Icon Image Data Storage Area H50b1a5 (Fig. 1042). As described in the present drawing, House Item Icon Image Data Storage Area H50b1a5 comprises three columns, i.e., "House Item ID", "House Item Icon Image Data", and "House Item Name Data". Column "House Item ID" stores the house item IDs which represent the identifications of the house items, such as Glasses 50GL (Fig. 1022) , Book

50BK (Fig. 1023), Pen 50PN (Fig. 1024), and Nail Clipper 50NC (Fig. 1025). Here, the house items are the tangible objects placed in a house (house #1 in the present example) which are movable by human being. Column "House Item Icon Image Data" stores the house item icon image data which are the image data of the icons designed to be displayed on LCD 201 (Fig. 1) representing the house items. Column "House Item Name Data" stores the house item name data which are text data designed to be displayed on LCD 201 (Fig. 1) representing the name of the house items. In the example described in the present drawing, House Item Icon Image Data Storage Area H50b1a5 (Fig. 1042) stores the following data: the house item ID 'House Item #1' of which the house item ID and the house item name data are 'House Item Icon Image Data #1' and 'Glasses' respectively, wherein 'Glasses' represents Glasses 50GL (Fig. 1022); the house item ID 'House Item #2' of which the house item ID and the house item name data are 'House Item Icon Image Data #2' and 'Book' respectively, wherein 'Book' represents Book 50BK (Fig. 1023); the house item ID 'House Item #3' of which the house item ID and the house item name data are 'House Item Icon Image Data #3' and 'Pen' respectively,

wherein 'Pen' represents Pen 50PN (Fig. 1024); and the house item ID 'House Item #4' of which the house item ID and the house item name data are 'House Item Icon Image Data #4' and 'Nail Clipper' respectively, wherein 'Nail Clipper' represents Nail Clipper 50NC (Fig. 1025).

[3460] Fig. 1047 illustrates the data stored in Com. Device Icon Image Data Storage Area H50b1a6 (Fig. 1042). As described in the present drawing, Com. Device Icon Image Data Storage Area H50b1a6 comprises three columns, i.e., "Com. Device ID", "Com. Device Icon Image Data", and "User Name Data". Column "Com. Device ID" stores the communication device IDs which represent the identifications of Communication Devices 200. Column "Com. Device Icon Image Data" stores the communication device icon image data which are the image data of the icons designed to be displayed on LCD 201 (Fig. 1) representing Communication Devices 200. Column "User Name Data" stores the user name data which are text data designed to be displayed on LCD 201 (Fig. 1) representing the name of the users of Communication Devices 200. In the example described in the present drawing, Com. Device Icon Image Data Storage Area H50b1a6 stores the following data: the communication device ID 'Com. Device #1' of which the

communication device icon image data and the user name data are 'Com. Device Icon Image Data #1' and 'User Name #1' respectively; the communication device ID 'Com. Device #2' of which the communication device icon image data and the user name data are 'Com. Device Icon Image Data #2' and 'User Name #2' respectively; and the communication device ID 'Com. Device #3' of which the communication device icon image data and the user name data are 'Com. Device Icon Image Data #3' and 'User Name #3' respectively.

[3461] Fig. 1048 illustrates the software programs stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1039). As described in the present drawing, House Item Pin-pointing Software Storage Area H50c stores House Layout Data Requesting Software H50c1, House Layout Data Sending/Receiving Software H50c2, Room Layout Data Requesting Software H50c4, Room Layout Data Sending/Receiving Software H50c5, House Item List Displaying Software H50c6a, Selected House Item ID Sending/Receiving Software H50c8, Selected House Item Finding Software H50c9, Selected House Item Locating Software H50c10, Calculated GPS Data Sending/Receiving Software H50c11, Com. Device List Displaying Software

H50c12a, Selected Com. Device ID Sending/Receiving Software H50c14, Selected Com. Device Finding Software H50c15, Selected Com. Device Locating Software H50c16, and Calculated GPS Data Sending/Receiving Software H50c17. House Layout Data Requesting Software H50c1 is the software program described in Fig. 1060. House Layout Data Sending/Receiving Software H50c2 is the software program described in Fig. 1062. Room Layout Data Requesting Software H50c4 is the software program described in Fig. 1064. Room Layout Data Sending/Receiving Software H50c5 is the software program described in Fig. 1066. House Item List Displaying Software H50c6a is the software program described in Fig. 1068. Selected House Item ID Sending/Receiving Software H50c8 is the software program described in Fig. 1070. Selected House Item Finding Software H50c9 is the software program described in Fig. 1071. Selected House Item Locating Software H50c10 is the software program described in Fig. 1072. Calculated GPS Data Sending/Receiving Software H50c11 is the software program described in Fig. 1073. Com. Device List Displaying Software H50c12a is the software program described in Fig. 1075. Selected Com. Device ID Sending/Receiving Software H50c14 is the soft-

ware program described in Fig. 1077. Selected Com. Device Finding Software H50c15 is the software program described in Fig. 1078. Selected Com. Device Locating Software H50c16 is the software program described in Fig. 1079. Calculated GPS Data Sending/Receiving Software H50c17 is the software program described in Fig. 1080.

[3462] Fig. 1049 illustrates the storage area included in RAM 206 (Fig. 1) of Communication Device 200. As described in the present drawing, RAM 206 includes House Item Pin-pointing Information Storage Area 20650a of which the data and the software programs stored therein are described in 1050.

[3463] The data and software programs stored in House Item Pin-pointing Information Storage Area 20650a (Fig. 1049) are downloaded from Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[3464] Fig. 1050 illustrates the storage areas included in House Item Pin-pointing Information Storage Area 20650a (Fig. 1049). As described in the present drawing, House Item Pin-pointing Information Storage Area 20650a includes House Item Pin-pointing Data Storage Area 20650b and House Item Pin-pointing Software Storage Area 20650c. House Item Pin-pointing Data Storage Area 20650b stores

the data necessary to implement the present function on the side of Communication Device 200, such as the ones described in Figs. 1051 through 1058. House Item Pin-pointing Software Storage Area 20650c stores the software programs necessary to implement the present function on the side of Communication Device 200, such as the ones described in Fig. 1059.

[3465] Fig. 1051 illustrates the storage areas included in House Item Pin-pointing Data Storage Area 20650b (Fig. 1050). As described in the present drawing, House Item Pin-pointing Data Storage Area 20650b includes House Data Storage Area 20650b1, Work Area 20650b2, Selected House Item ID Storage Area 20650b3, and Selected Com. Device ID Storage Area 20650b4. House Data Storage Area 20650b1 is the storage area described in Fig. 1052. Work Area 20650b2 is a storage area utilized for CPU 211 (Fig. 1) to perform calculations and to temporarily store data. Selected House Item ID Storage Area 20650b3 stores the identification of the house displayed on LCD 201 (Fig. 1) by implementing the present function. Selected Com. Device ID Storage Area 20650b4 stores the identification of Communication Device 200 displayed on LCD 201 (Fig. 1) by implementing the present function.

[3466] Fig. 1052 illustrates the storage areas included in House Data Storage Area 20650b1 (Fig. 1051). As described in the present drawing, House Data Storage Area 20650b1 includes House#1 Data Storage Area 20650b1a. House#1 Data Storage Area 20650b1a stores the house data of house #1. Here, house #1 is the identification of the house of which the layout and the rooms thereof, and the house items placed therein are displayed on LCD 201 (Fig. 1) by implementing the present function. The house data stored in House#1 Data Storage Area 20650b1a are explained in Fig. 1053.

[3467] Fig. 1053 illustrates the data stored in House#1 Data Storage Area 20650b1a (Fig. 1052). House#1 Data Storage Area 20650b1a stores the house data of house #1. As described in the present drawing, House#1 Data Storage Area 20650b1a stores House Relay Location Data 20650b1a1, Com. Device Location Data Storage Area 20650b1a2, House Layout Data Storage Area 20650b1a3, Room Layout Data Storage Area 20650b1a4, House Item Icon Image Data Storage Area 20650b1a5, and Com. Device Icon Image Data Storage Area 20650b1a6. House Relay Location Data 20650b1a1 is the data described in Fig. 1056. Com. Device Location Data Storage Area

20650b1a2 stores the communication device location data representing the location of Communication Device 200. House Layout Data Storage Area 20650b1a3 stores the data described in Fig. 1054. Room Layout Data Storage Area 20650b1a4 stores the data described in Fig. 1055. House Item Icon Image Data Storage Area 20650b1a5 stores the data described in Fig. 1057. Com. Device Icon Image Data Storage Area 20650b1a6 stores the data described in Fig. 1058.

[3468] Fig. 1054 illustrates the house layout data stored in House Layout Data Storage Area 20650b1a3 (Fig. 1053). House Layout Data Storage Area 20650b1a3 stores the house layout data which represents the layout of House #1. Referring to the present drawing, the house layout data stored in House Layout Data Storage Area 20650b1a3 represents the layout of House #1 which is composed of four rooms, i.e., Room A, Room B, Room C, and Room D. Room A is adjacent to Room B and C, Room B is adjacent to Room A and D, Room C is adjacent to Room A and D, and Room D is adjacent to Room B and C.

[3469] Fig. 1055 illustrates the room layout data stored in Room Layout Data Storage Area 20650b1a4 (Fig. 1053). As described in the present drawing, Room Layout Data Storage

Area 20650b1a4 comprises two columns, i.e., "Room ID" and "Room Layout Data". Column "Room ID" stores the room IDs which are the identifications of the room layout data stored in column "Room Layout Data". Column "Room Layout Data" stores the room layout data of each room included in house #1, i.e., Room A, Room B, Room C, and Room D. Here, the room layout data is the data representing the layout of the room. In the example described in the present drawing, Room Layout Data Storage Area 20650b1a4 (Fig. 1042) stores the following data: the room ID 'Room A' of which the room layout data is 'Room Layout Data 50RLD1'; the room ID 'Room B' of which the room layout data is 'Room Layout Data 50RLD2'; the room ID 'Room C' of which the room layout data is 'Room Layout Data 50RLD3'; and the room ID 'Room D' of which the room layout data is 'Room Layout Data 50RLD4'.

[3470] Fig. 1056 illustrates the data stored in House Relay Location Data 20650b1a1 (Fig. 1053). As described in the present drawing, House Relay Location Data 20650b1a1 comprises four columns, i.e., "House ID", "Room ID", "Relay ID", and "Relay Location Data". Column "House ID" stores the house ID which is the identification of house #1. Column "Room ID" stores the room IDs which are the

identifications of the rooms included in house #1. Column "Relay ID" stores the relay IDs which are the identifications of the relays installed in each room. Column "Relay Location Data" stores the relay location data which represents the location of each relay. In the example described in the present drawing, the relay IDs R50A1 through R50A4 installed in Room A are stored in column 'Relay ID' of which the corresponding relay location data are stored in column "Relay Location Data" in (x, y, z) format; the relay IDs R50B1 through R50B4 installed in Room B are stored in column 'Relay ID' of which the corresponding relay location data are stored in column "Relay Location Data" in (x, y, z) format; the relay IDs R50C1 through R50C4 installed in Room C are stored in column 'Relay ID' of which the corresponding relay location data are stored in column "Relay Location Data" in (x, y, z) format; and the relay IDs R50D1 through R50D4 installed in Room D are stored in column 'Relay ID' of which the corresponding relay location data are stored in column "Relay Location Data" in (x, y, z) format.

[3471] Fig. 1057 illustrates the data stored in House Item Icon Image Data Storage Area 20650b1a5 (Fig. 1053). As described in the present drawing, House Item Icon Image

Data Storage Area 20650b1a5 comprises three columns, i.e., "House Item ID", "House Item Icon Image Data", and "House Item Name Data". Column "House Item ID" stores the house item IDs which represent the identifications of the house items, such as Glasses 50GL, Book 50BK, and Pen 50PN. Here, the house items are the tangible objects placed in a house (house #1 in the present example) which are movable by human being. Column "House Item Icon Image Data" stores the house item icon image data which are image data of the icons designed to be displayed on LCD 201 (Fig. 1) representing the house items. Column "House Item Name Data" stores the house item name data which are text data designed to be displayed on LCD 201 (Fig. 1) representing the name of the house items. In the example described in the present drawing, House Item Icon Image Data Storage Area 20650b1a5 stores the following data: the house item ID 'House Item #1' of which the house item ID and the house item name data are 'House Item Icon Image Data #1' and 'Glasses' respectively, wherein 'Glasses' represents Glasses 50GL (Fig. 1022); the house item ID 'House Item #2' of which the house item ID and the house item name data are 'House Item Icon Image Data #2' and 'Book' respectively, wherein

'Book' represents Book 50BK (Fig. 1023); the house item ID 'House Item #3' of which the house item ID and the house item name data are 'House Item Icon Image Data #3' and 'Pen' respectively, wherein 'Pen' represents Pen 50PN (Fig. 1024); and the house item ID 'House Item #4' of which the house item ID and the house item name data are 'House Item Icon Image Data #4' and 'Nail Clipper' respectively, wherein 'Nail Clipper' represents Nail Clipper 50NC (Fig. 1025).

[3472] Fig. 1058 illustrates the data stored in Com. Device Icon Image Data Storage Area 20650b1a6 (Fig. 1053). As described in the present drawing, Com. Device Icon Image Data Storage Area 20650b1a6 comprises three columns, i.e., "Com. Device ID", "Com. Device Icon Image Data", and "User Name Data". Column "Com. Device ID" stores the communication device IDs which represent the identifications of Communication Devices 200. Column "Com. Device Icon Image Data" stores the communication device icon image data which are the image data of the icons designed to be displayed on LCD 201 (Fig. 1) representing Communication Devices 200. Column "User Name Data" stores the user name data which are text data designed to be displayed on LCD 201 (Fig. 1) representing the names

of the users of Communication Devices 200. In the example described in the present drawing, Com. Device Icon Image Data Storage Area 20650b1a6 stores the following data: the communication device ID 'Com. Device #1' of which the communication device icon image data and the user name data are 'Com. Device Icon Image Data #1' and 'User Name #1' respectively; the communication device ID 'Com. Device #2' of which the communication device icon image data and the user name data are 'Com. Device Icon Image Data #2' and 'User Name #2' respectively; and the communication device ID 'Com. Device #3' of which the communication device icon image data and the user name data are 'Com. Device Icon Image Data #3' and 'User Name #3' respectively.

[3473] Fig. 1059 illustrates the software programs stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1050). As described in the present drawing, House Item Pin-pointing Software Storage Area 20650c stores House Layout Data Requesting Software 20650c1, House Layout Data Sending/Receiving Software 20650c2, House Layout Data Displaying Software 20650c3, Room Layout Data Requesting Software 20650c4, Room Layout Data Sending/Receiving Software 20650c5, Room Layout Data

Displaying Software 20650c6, House Item List Displaying Software 20650c6a, House Item Selecting Software 20650c7, Selected House Item ID Sending/Receiving Software 20650c8, Calculated GPS Data Sending/Receiving Software 20650c11, Selected House Item Displaying Software 20650c12, Com. Device List Displaying Software 20650c12a, Com. Device Selecting Software 20650c13, Selected Com. Device ID Sending/Receiving Software 20650c14, Calculated GPS Data Sending/Receiving Software 20650c17, and Selected Com. Device Displaying Software 20650c18. House Layout Data Requesting Software 20650c1 is the software program described in Fig. 1060. House Layout Data Sending/Receiving Software 20650c2 is the software program described in Fig. 1062. House Layout Data Displaying Software 20650c3 is the software program described in Fig. 1063. Room Layout Data Requesting Software 20650c4 is the software program described in Fig. 1064. Room Layout Data Sending/Receiving Software 20650c5 is the software program described in Fig. 1066. Room Layout Data Displaying Software 20650c6 is the software program described in Fig. 1067. House Item List Displaying Software 20650c6a is the software program described in Fig. 1068. House Item

Selecting Software 20650c7 is the software program described in Fig. 1069. Selected House Item ID Sending/Receiving Software 20650c8 is the software program described in Fig. 1070. Calculated GPS Data Sending/Receiving Software 20650c11 is the software program described in Fig. 1073. Selected House Item Displaying Software 20650c12 is the software program described in Fig. 1074. Com. Device List Displaying Software 20650c12a is the software program described in Fig. 1075. Com. Device Selecting Software 20650c13 is the software program described in Fig. 1076. Selected Com. Device ID Sending/Receiving Software 20650c14 is the software program described in Fig. 1077. Calculated GPS Data Sending/Receiving Software 20650c17 is the software program described in Fig. 1080. Selected Com. Device Displaying Software 20650c18 is the software program described in Fig. 1081.

[3474] Figs. 1060 through 1063 illustrate the method to display a house layout on LCD 201 (Fig. 1) of Communication Device 200.

[3475] Fig. 1060 illustrates House Layout Data Requesting Software H50c1 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1048) of Host H (Fig. 429) and

House Layout Data Sending/Receiving Software 20650c2 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1059) of Communication Device 200, which respectively sends and receives a house layout data request. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a house layout data request 50HLDR (S1), which is received by Host H (S2). Here, the house layout data request 50HLDR is a request signal described in Fig. 1061.

[3476] Fig. 1061 illustrates the data included in House Layout Data Request 50HLDR described in Fig. 1060. As described in the present drawing, House Layout Data Request 50HLDR includes Request Signal 50HLDRa and House ID 50HLDRb. Request Signal 50HLDRa is a signal requesting to send to Communication Device 200 a house layout data which is the data representing the layout of the house identified by House ID 50HLDRb. House ID 50HLDRb is the house ID representing the identification of a house (house #1 in the present example) of which the layout is to be displayed on LCD 201 (Fig. 1) of Communication Device 200.

[3477] Fig. 1062 illustrates House Layout Data Sending/Receiving Software H50c2 stored in House Item Pin-pointing Soft-

ware Storage Area H50c (Fig. 1048) of Host H (Fig. 429) and House Layout Data Sending/Receiving Software 20650c2 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1059) of Communication Device 200, which respectively sends and receives a house layout data. Referring to the present drawing, Host H retrieves the house ID from House Layout Data Request 50HLDR (Fig. 1061) (S1) and identifies the house data stored in House Data Storage Area H50b1 (Fig. 1040) (in the present example, House#1 Data Storage Area H50b1a is selected) (S2). Host H then retrieves the house layout data from House Layout Data Storage Area H50b1a3 (Fig. 1042) (S3), and sends the data to Communication Device 200 (S4). CPU 211 (Fig. 1) of Communication Device 200 receives the house layout data (S5), and stores the data in House Layout Data Storage Area 20650b1a3 (Fig. 1053) (S6).

[3478] Fig. 1063 illustrates House Layout Data Displaying Software 20650c3 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1059) of Communication Device 200, which displays house layout data on LCD 201 (Fig. 1) of Communication Device 200. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200

retrieves the house layout data from House Layout Data Storage Area 20650b1a3 (Fig. 1053) (S1), and displays the data on LCD 201 (Fig. 1) (S2).

[3479] Figs. 1064 through 1067 illustrate the method to display a room layout on LCD 201 (Fig. 1) of Communication Device 200.

[3480] Fig. 1064 illustrates Room Layout Data Requesting Software H50c4 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1048) of Host H (Fig. 429) and Room Layout Data Requesting Software 20650c4 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1059) of Communication Device 200, which respectively sends and receives a room layout data request. Referring to the present drawing, a room of which the layout is to be displayed on LCD 201 (Fig. 1) is selected by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) sends a room layout data request 50RLDR (S1), which is received by Host H (S2). Here, the room layout data request 50RLDR is a request signal described in Fig. 1065.

[3481] Fig. 1065 illustrates the data included in Room Layout Data Request 50RLDR described in Fig. 1064. As described in the present drawing, Room Layout Data Request

50RLDR includes Request Signal 50RLDRa, House ID 50RLDRb, and Room ID 50RLDRc. Request Signal 50RLDRa is a signal requesting to send to Communication Device 200 a room layout data which is the data representing the layout of the room identified by House ID 50RLDRb and Room ID 50RLDRc. House ID 50RLDRb is the house ID representing the identification of a house (house #1 in the present example). Room ID 50RLDRc is the room ID representing the identification of a room (Room A in the present example) of which the layout is to be displayed on LCD 201 (Fig. 1) of Communication Device 200.

[3482] Fig. 1066 illustrates Room Layout Data Sending/Receiving Software H50c5 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1048) of Host H (Fig. 429) and Room Layout Data Sending/Receiving Software 20650c5 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1059) of Communication Device 200, which respectively sends and receives a room layout data. Referring to the present drawing, Host H retrieves the house ID and the room ID from Room Layout Data Request 50RLDR (S1), and identifies the house data stored in House Data Storage Area H50b1 (Fig. 1040) (house #1 in the present example) (S2). Host H then identifies the room

layout data stored in Room Layout Data Storage Area H50b1a4 (Fig. 1042) (S3), and retrieves the data from Room Layout Data Storage Area H50b1a4 (Fig. 1042) (S4). The room layout data is sent from Host H (S5), and is received by Communication Device 200 (S6). CPU 211 (Fig. 1) of Communication Device 200 stores the room layout data in Room Layout Data Storage Area 20650b1a4 (Fig. 1053) (S7).

[3483] Fig. 1067 illustrates Room Layout Data Displaying Software 20650c6 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1059) of Communication Device 200, which displays room layout data on LCD 201 (Fig. 1) of Communication Device 200. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the room layout data from Room Layout Data Storage Area 20650b1a4 (Fig. 1053) (S1) and displays the data on LCD 201 (Fig. 1) (S2).

[3484] Figs. 1068 through 1074 illustrate the method to display the house item icons on LCD 201 (Fig. 1) of Communication Device 200.

[3485] Fig. 1068 illustrates House Item List Displaying Software H50c6a stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1048) of Host H (Fig. 429) and House

Item List Displaying Software 20650c6a stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1059) of Communication Device 200, which displays a house item list on LCD 201 (Fig. 1) of Communication Device 200. Referring to the present drawing, Communication Device 200 sends a request for the house item IDs, the house item icon image data, and the house item name data (S1), and Host H receives the request (S2). Host H then retrieves the house item IDs, the house item icon image data, and the house item name data from House Item Icon Image Data Storage Area H50b1a5 (Fig. 1042) (S3), and sends these data to Communication Device 200 (S4). Upon receiving the house item IDs, the house item icon image data, and the house item name data (S5), CPU 211 (Fig. 1) of Communication Device 200 stores these data in House Item Icon Image Data Storage Area 20650b1a5 (Fig. 1053) (S6). CPU 211 then retrieves the house item IDs, the house item icon image data, and the house item name data from House Item Icon Image Data Storage Area 20650b1a5 (Fig. 1053) (S7), and displays on LCD 201 (Fig. 1) a list of the house items including these data (S8).

[3486] Fig. 1069 illustrates House Item Selecting Software 20650c7 stored in House Item Pin-pointing Software Stor-

age Area 20650c (Fig. 1059) of Communication Device 200, which selects a house item from the house item list displayed on LCD 201 (Fig. 1) of Communication Device 200. Referring to the present drawing, a house item which is to be located by implementing the present function is selected from the list displayed in S8 of Fig. 1068 by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) then stores the selected house item ID in Selected House Item ID Storage Area 20650b3 (Fig. 1051) (S2).

[3487] Fig. 1070 illustrates Selected House Item ID Sending/Receiving Software H50c8 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1048) of Host H (Fig. 429) and Selected House Item ID Sending/Receiving Software 20650c8 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1059) of Communication Device 200, which respectively sends and receives house item ID selected by House Item Selecting Software 20650c7 described in Fig. 1069. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the selected house item ID from Selected House Item ID Storage Area 20650b3 (Fig. 1051) (S1). CPU 211 sends the selected house item ID (S2), which is received by Host H

(S3). Host H then stores the selected house item ID in Selected House Item ID Storage Area H50b3 (Fig. 1040) (S4).

[3488] Fig. 1071 illustrates Selected House Item Finding Software H50c9 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1048) of Host H (Fig. 429), which finds the house item selected by House Item Selecting Software 20650c7 described in Fig. 1069. Referring to the present drawing, Host H receives the ID signals from all house items via relays described in Figs. 1027 through 1030 (S1). Here, the ID signals are the signals emitted from the relays representing their identifications. Host H then detects the selected house item (S2), and identifies the room ID of the room in which the selected house item is located (S3).

[3489] Fig. 1072 illustrates Selected House Item Locating Software H50c10 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1048) of Host H (Fig. 429), which locates the house item selected House Item Selecting Software 20650c7 described in Fig. 1069. Referring to the present drawing, Host H retrieves the row GPS data 50RGD from the relays in the room identified in S3 of Fig. 1071 (S1). The row GPS data 50RGD is stored in Work Area H50b2 (Fig. 1040) (S2). Host H then calculates the row

GPS data 50RGD in Work Area H50b2 (Fig. 1040) to produce the calculated GPS data (S3), which is stored in Work Area H50b2 (Fig. 1040) (S4). Here, the row GPS data 50RGD is a primitive data utilized to produce the calculated GPS data, and the calculated GPS data is the data representing the location in (x, y, z) format.

[3490] Fig. 1073 illustrates Calculated GPS Data Sending/Receiving Software H50c11 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1048) of Host H (Fig. 429) and Calculated GPS Data Sending/Receiving Software 20650c11 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1059) of Communication Device 200, which respectively sends and receives the calculated GPS data produced by Selected House Item Locating Software H50c10 described in Fig. 1072. Referring to the present drawing, Host H retrieves the calculated GPS Data from Work Area H50b2 (Fig. 1040) (S1), and sends the data to Communication Device 200 (S2). CPU 211 (Fig. 1) of Communication Device 200 receives the calculated GPS Data from Host H (S3), and stores the data in Work Area 20650b2 (Fig. 1051) (S4).

[3491] Fig. 1074 illustrates Selected House Item Displaying Software 20650c12 stored in House Item Pin-pointing Soft-

ware Storage Area 20650c (Fig. 1059) of Communication Device 200, which displays the location of the house item selected by House Item Selecting Software 20650c7 described in Fig. 1069. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the calculated GPS Data from Work Area 20650b2 (Fig. 1051) (S1) and further retrieves the house item icon image data from House Item Icon Image Data Storage Area 20650b1a5 (Fig. 1053) by referring to the selected house item ID stored in Selected House Item ID Storage Area 20650b3 (Fig. 1051) (S2). CPU 211 then displays the house item icon image data on LCD 201 (Fig. 1) at the location corresponding to the calculated GPS data stored in S4 of Fig. 1073 (S3).

[3492] Figs. 1075 through 1081 illustrate the method to display the communication device icons on LCD 201 (Fig. 1) of Communication Device 200.

[3493] Fig. 1075 illustrates Com. Device List Displaying Software H50c12a stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1048) of Host H (Fig. 429) and Com. Device List Displaying Software 20650c12a stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1059) of Communication Device 200, which displays

a communication device list (a list of communication devices) on LCD 201 (Fig. 1) of Communication Device 200. Referring to the present drawing, Communication Device 200 sends a request for the communication device IDs, the communication device icon image data, and the user name data (S1), and Host H receives the request (S2). Host H then retrieves the communication device IDs, the communication device icon image data, and the user name data from Com. Device Icon Image Data Storage Area H50b1a6 (Fig. 1042) (S3), and sends these data to Communication Device 200 (S4). Upon receiving the communication device IDs, the communication device icon image data, and the user name data (S5), CPU 211 (Fig. 1) of Communication Device 200 stores these data in Com. Device Icon Image Data Storage Area 20650b1a6 (Fig. 1053) (S6). CPU 211 then retrieves the communication device IDs, the communication device icon image data, and the user name data from Com. Device Icon Image Data Storage Area 20650b1a6 (Fig. 1053) (S7), and displays on LCD 201 (Fig. 1) a list of the communication devices including these data (S8).

[3494] Fig. 1076 illustrates Com. Device Selecting Software 20650c13 stored in House Item Pin-pointing Software

Storage Area 20650c (Fig. 1059) of Communication Device 200, which selects a communication device from the communication device list displayed on LCD 201 (Fig. 1) of Communication Device 200. Referring to the present drawing, a communication device which is to be located by implementing the present function is selected from the list displayed in S8 of Fig. 1075 by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) then stores the selected communication device ID in Selected Com. Device ID Storage Area 20650b4 (Fig. 1051) (S2).

[3495] Fig. 1077 illustrates Selected Com. Device ID Sending/Receiving Software H50c14 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1048) of Host H (Fig. 429) and Selected Com. Device ID Sending/Receiving Software 20650c14 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1059) of Communication Device 200, which respectively sends and receives the communication device ID selected by Com. Device Selecting Software 20650c13 described in Fig. 1076. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the selected communication device ID from Selected Com. Device ID Storage Area

20650b4 (Fig. 1051) (S1). CPU 211 sends the selected communication device ID (S2), which is received by Host H (S3). Host H then stores the selected communication device ID in Selected Com. Device ID Storage Area H50b4 (Fig. 1040) (S4).

[3496] Fig. 1078 illustrates Selected Com. Device Finding Software H50c15 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1048) of Host H (Fig. 429), which finds the communication device selected by Com. Device Selecting Software 20650c13 described in Fig. 1076. Referring to the present drawing, Host H receives the ID signals from all communication devices via relays described in Figs. 1027 through 1030 (S1). Here, the ID signals are the signals emitted from the relays representing their identifications. Host H then detects the selected communication device (S2), and identifies the room ID of the room in which the selected communication device is located (S3).

[3497] Fig. 1079 illustrates Selected Com. Device Locating Software H50c16 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1048) of Host H (Fig. 429), which locates the communication device selected by Com. Device Selecting Software 20650c13 described in Fig. 1076.

Referring to the present drawing, Host H retrieves the row GPS data 50RGD from the relays in the room identified in S3 of Fig. 1078 (S1). The row GPS data 50RGD is stored in Work Area H50b2 (Fig. 1040) (S2). Host H then calculates the row GPS data 50RGD in Work Area H50b2 (Fig. 1040) to produce the calculated GPS data (S3), which is stored in Work Area H50b2 (Fig. 1040) (S4). Here, the row GPS data 50RGD is a primitive data utilized to produce the calculated GPS data, and the calculated GPS data is the data representing the location in (x, y, z) format.

[3498] Fig. 1080 illustrates Calculated GPS Data Sending/Receiving Software H50c17 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1048) of Host H (Fig. 429) and Calculated GPS Data Sending/Receiving Software 20650c17 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1059) of Communication Device 200, which respectively sends and receives the calculated GPS data produced by Selected Com. Device Locating Software H50c16 described in Fig. 1079. Referring to the present drawing, Host H retrieves the calculated GPS Data from Work Area H50b2 (Fig. 1040) (S1), and sends the data to Communication Device 200 (S2). CPU 211 (Fig. 1) of Communication Device 200 receives

the calculated GPS Data from Host H (S3), and stores the data in Work Area 20650b2 (Fig. 1051) (S4).

[3499] Fig. 1081 illustrates Selected Com. Device Displaying Software 20650c18 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1059) of Communication Device 200, which displays the location of the communication device selected by Com. Device Selecting Software 20650c13 described in Fig. 1076. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the calculated GPS Data from Work Area 20650b2 (Fig. 1051) (S1) and further retrieves the communication device icon image data from Com. Device Icon Image Data Storage Area 20650b1a6 (Fig. 1053) by referring to the selected communication device ID stored in Selected Com. Device ID Storage Area 20650b4 (Fig. 1051) (S2). CPU 211 then displays the communication device icon image data on LCD 201 (Fig. 1) at the location corresponding to the calculated GPS data stored in S4 of Fig. 1080 (S3).

[3500] *<<House Item Pin-pointing Function -- Another Embodiment01>>*

[3501] Figs. 1082 through 1102 illustrate another embodiment to implement the present function.

[3502] Fig. 1082 illustrates the software programs stored in

House Item Pin-pointing Software Storage Area H50c (Fig. 1039) of Host H (Fig. 429). As described in the present drawing, House Item Pin-pointing Software Storage Area H50c stores House Data Requesting Software H50c19, House Data Sending/Receiving Software H50c20, Selected House Item ID Sending/Receiving Software H50c8, Selected House Item Finding Software H50c9, Selected House Item Locating Software H50c10, Calculated GPS Data Sending/Receiving Software H50c11, Selected Com. Device ID Sending/Receiving Software H50c14, Selected Com. Device Finding Software H50c15, Selected Com. Device Locating Software H50c16, and Calculated GPS Data Sending/Receiving Software H50c17. The sequence of each software program is described hereinafter.

[3503] Fig. 1083 illustrates the software programs stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1050). As described in the present drawing, House Item Pin-pointing Software Storage Area 20650c stores House Data Requesting Software 20650c19, House Data Sending/Receiving Software 20650c20, House Layout Data Displaying Software 20650c3, Room Layout Data Displaying Software 20650c6, House Item List Displaying Software 20650c6a, House Item Selecting Software 20650c7,

Selected House Item ID Sending/Receiving Software 20650c8, Calculated GPS Data Sending/Receiving Software 20650c11, Selected House Item Displaying Software 20650c12, Com. Device List Displaying Software 20650c12a, Com. Device Selecting Software 20650c13, Selected Com. Device ID Sending/Receiving Software 20650c14, Calculated GPS Data Sending/Receiving Software 20650c17, and Selected Com. Device Displaying Software 20650c18. The sequence of each software program is described hereinafter.

[3504] Fig. 1084 illustrates House Data Requesting Software H50c19 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1082) of Host H (Fig. 429) and House Data Requesting Software 20650c19 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1083) of Communication Device 200, which respectively sends and receives a house layout data request. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a house data request 50HDR (S1), which is received by Host H (S2). Here, the house data request 50HDR is a request signal described in Fig. 1085.

[3505] Fig. 1085 illustrates the data included in House Data Request 50HDR described in Fig. 1084. As described in the

present drawing, House Data Request 50HDR includes Request Signal 50HDRa and House ID 50HDRb. Request Signal 50HDRa is a signal requesting to send to Communication Device 200 one of the house data stored in House Data Storage Area H50b1 (Fig. 1040) (the house#1 data in the present example). House ID 50HDRb is the house ID representing the identification of a house (house #1 in the present example).

[3506] Fig. 1086 illustrates House Data Sending/Receiving Software H50c20 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1082) of Host H (Fig. 429) and House Data Sending/Receiving Software 20650c20 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1083) of Communication Device 200, which respectively sends and receives a house layout data. Referring to the present drawing, Host H retrieves the house ID from House Layout Data Request 50HDR (Fig. 1085) (S1) and identifies the house data stored in House Data Storage Area H50b1 (Fig. 1040) (in the present example, House#1 Data Storage Area H50b1a is selected) (S2). Host H then retrieves the house data from House#1 Data Storage Area H50b1a (Fig. 1041) (S3), and sends the data to Communication Device 200 (S4). CPU 211 (Fig. 1) of Communica-

tion Device 200 receives the house data (S5), and stores the data in House#1 Data Storage Area 20650b1a (Fig. 1052) (S6).

[3507] Fig. 1087 illustrates House Layout Data Displaying Software 20650c3 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1083) of Communication Device 200, which displays house layout data on LCD 201 (Fig. 1) of Communication Device 200. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the house layout data from House Layout Data Storage Area 20650b1a3 (Fig. 1053) (S1), and displays the data on LCD 201 (Fig. 1) (S2).

[3508] Fig. 1088 illustrates Room Layout Data Displaying Software 20650c6 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1083) of Communication Device 200, which displays the room layout data on LCD 201 (Fig. 1) of Communication Device 200. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the room layout data from Room Layout Data Storage Area 20650b1a4 (Fig. 1053) (S1) and displays the data on LCD 201 (Fig. 1) (S2).

[3509] Figs. 1089 through 1095 illustrate the method to display the house item icons on LCD 201 (Fig. 1) of Communica-

tion Device 200.

[3510] Fig. 1089 illustrates House Item List Displaying Software 20650c6a stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1083) of Communication Device 200. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the house item IDs, the house item icon image data, and the house item name data from House Item Icon Image Data Storage Area 20650b1a5 (Fig. 1053) (S1). CPU 211 then displays on LCD 201 (Fig. 1) a list of the house items including these data (S2).

[3511] Fig. 1090 illustrates House Item Selecting Software 20650c7 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1083) of Communication Device 200, which selects a house item from the house item list displayed on LCD 201 (Fig. 1) of Communication Device 200. Referring to the present drawing, the house item which is to be located by implementing the present function is selected from the list displayed in S2 of Fig. 1089 by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) then stores the selected house item ID in Selected House Item ID Storage Area 20650b3 (Fig. 1051) (S2).

[3512] Fig. 1091 illustrates Selected House Item ID Sending/Receiving Software H50c8 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1082) of Host H (Fig. 429) and Selected House Item ID Sending/Receiving Software 20650c8 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1083) of Communication Device 200, which respectively sends and receives house item ID selected by House Item Selecting Software 20650c7 described in Fig. 1090. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the selected house item ID from Selected House Item ID Storage Area 20650b3 (Fig. 1051) (S1). CPU 211 sends the selected house item ID (S2), which is received by Host H (S3). Host H then stores the selected house item ID in Selected House Item ID Storage Area H50b3 (Fig. 1040) (S4).

[3513] Fig. 1092 illustrates Selected House Item Finding Software H50c9 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1082) of Host H (Fig. 429), which finds the house item selected by House Item Selecting Software 20650c7 described in Fig. 1090. Referring to the present drawing, Host H receives the ID signals from all house items via relays described in Figs. 1027 through 1030 (S1). Here, the ID signals are the signals emitted from the

relays representing their identifications. Host H then detects the selected house item (S2), and identifies the room ID of the room in which the selected house item is located (S3).

[3514] Fig. 1093 illustrates Selected House Item Locating Software H50c10 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1082) of Host H (Fig. 429), which locates the house item selected by House Item Selecting Software 20650c7 described in Fig. 1090. Referring to the present drawing, Host H retrieves the row GPS data 50RGD from the relays in the room identified in S3 of Fig. 1092 (S1). The row GPS data 50RGD is stored in Work Area H50b2 (Fig. 1040) (S2). Host H then calculates the row GPS data 50RGD in Work Area H50b2 (Fig. 1040) to produce the calculated GPS data (S3), which is stored in Work Area H50b2 (Fig. 1040) (S4). Here, the row GPS data 50RGD is a primitive data utilized to produce the calculated GPS data, and the calculated GPS data is the data representing the location in (x, y, z) format.

[3515] Fig. 1094 illustrates Calculated GPS Data Sending/Receiving Software H50c11 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1082) of Host H (Fig. 429) and Calculated GPS Data Sending/Receiving

Software 20650c11 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1083) of Communication Device 200, which respectively sends and receives the calculated GPS data produced by Selected House Item Locating Software H50c10 described in Fig. 1093. Referring to the present drawing, Host H retrieves the calculated GPS Data from Work Area H50b2 (Fig. 1040) (S1), and sends the data to Communication Device 200 (S2). CPU 211 (Fig. 1) of Communication Device 200 receives the calculated GPS Data from Host H (S3), and stores the data in Work Area 20650b2 (Fig. 1051) (S4).

[3516] Fig. 1095 illustrates Selected House Item Displaying Software 20650c12 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1083) of Communication Device 200, which displays the location of the house item selected by House Item Selecting Software 20650c7 described in Fig. 1090. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the calculated GPS Data from Work Area 20650b2 (Fig. 1051) (S1) and further retrieves the house item icon image data from House Item Icon Image Data Storage Area 20650b1a5 (Fig. 1053) by referring to the selected house item ID stored in Selected House Item ID Storage Area

20650b3 (Fig. 1051) (S2). CPU 211 then displays the house item icon image data on LCD 201 (Fig. 1) at the location corresponding to the calculated GPS data stored in S4 of Fig. 1094 (S3).

[3517] Figs. 1096 through 1102 illustrate the method to display the communication device icons on LCD 201 (Fig. 1) of Communication Device 200.

[3518] Fig. 1096 illustrates Com. Device List Displaying Software 20650c12a stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1083) of Communication Device 200. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the communication device IDs, the communication device icon image data, and the user name data from Com. Device Icon Image Data Storage Area 20650b1a6 (Fig. 1083) (S1). CPU 211 then displays on LCD 201 (Fig. 1) a list of the communication devices including these data (S2).

[3519] Fig. 1097 illustrates Com. Device Selecting Software 20650c13 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1083) of Communication Device 200, which selects a communication device from the communication device list displayed on LCD 201 (Fig. 1) of Communication Device 200. Referring to the present

drawing, a communication device which is to be located by implementing the present function is selected from the list displayed in S2 of Fig. 1096 by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) then stores the selected communication device ID in Selected Com. Device ID Storage Area 20650b4 (Fig. 1051) (S2).

[3520] Fig. 1098 illustrates Selected Com. Device ID Sending/Receiving Software H50c14 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1082) of Host H (Fig. 429) and Selected Com. Device ID Sending/Receiving Software 20650c14 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1083) of Communication Device 200, which respectively sends and receives the communication device ID selected by Com. Device Selecting Software 20650c13 described in Fig. 1076. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the selected communication device ID from Selected Com. Device ID Storage Area 20650b4 (Fig. 1051) (S1). CPU 211 sends the selected communication device ID (S2), which is received by Host H (S3). Host H then stores the selected communication device ID in Selected Com. Device ID Storage Area H50b4

(Fig. 1040) (S4).

[3521] Fig. 1099 illustrates Selected Com. Device Finding Software H50c15 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1082) of Host H (Fig. 429), which finds the communication device selected by Com. Device Selecting Software 20650c13 described in Fig. 1097. Referring to the present drawing, Host H receives the ID signals from all communication devices via relays described in Figs. 1027 through 1030 (S1). Here, the ID signals are the signals emitted from the relays representing their identifications. Host H then detects the selected communication device (S2), and identifies the room ID of the room in which the selected communication device is located (S3).

[3522] Fig. 1100 illustrates Selected Com. Device Locating Software H50c16 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1082) of Host H (Fig. 429), which locates the communication device selected by Com. Device Selecting Software 20650c13 described in Fig. 1097. Referring to the present drawing, Host H retrieves the row GPS data 50RGD from the relays in the room identified in S3 of Fig. 1099 (S1). The row GPS data 50RGD is stored in Work Area H50b2 (Fig. 1040) (S2). Host H then calculates

the row GPS data 50RGD in Work Area H50b2 (Fig. 1040) to produce the calculated GPS data (S3), which is stored in Work Area H50b2 (Fig. 1040) (S4). Here, the row GPS data 50RGD is a primitive data utilized to produce the calculated GPS data, and the calculated GPS data is the data representing the location in (x, y, z) format.

[3523] Fig. 1101 illustrates Calculated GPS Data Sending/Receiving Software H50c17 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1082) of Host H (Fig. 429) and Calculated GPS Data Sending/Receiving Software 20650c17 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1083) of Communication Device 200, which respectively sends and receives the calculated GPS data produced by Selected Com. Device Locating Software H50c16 described in Fig. 1100. Referring to the present drawing, Host H retrieves the calculated GPS Data from Work Area H50b2 (Fig. 1040) (S1), and sends the data to Communication Device 200 (S2). CPU 211 (Fig. 1) of Communication Device 200 receives the calculated GPS Data from Host H (S3), and stores the data in Work Area 20650b2 (Fig. 1051) (S4).

[3524] Fig. 1102 illustrates Selected Com. Device Displaying Software 20650c18 stored in House Item Pin-pointing

Software Storage Area 20650c (Fig. 1083) of Communication Device 200, which displays the location of the communication device selected by Com. Device Selecting Software 20650c13 described in Fig. 1097. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the calculated GPS Data from Work Area 20650b2 (Fig. 1051) (S1) and further retrieves the communication device icon image data from Com. Device Icon Image Data Storage Area 20650b1a6 (Fig. 1053) by referring to the selected communication device ID stored in Selected Com. Device ID Storage Area 20650b4 (Fig. 1051) (S2). CPU 211 then displays the communication device icon image data on LCD 201 (Fig. 1) at the location corresponding to the calculated GPS data stored in S4 of Fig. 1101 (S3).

[3525] *<<House Item Pin-pointing Function -- Another Embodiment02>>*

[3526] Figs. 1103 through 1128 illustrate another embodiment to implement the present function.

[3527] Fig. 1103 illustrates the software programs stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1039). As described in the present drawing, House Item Pin-pointing Software Storage Area H50c stores House Data Requesting Software H50c19, House Data Sending/

Receiving Software H50c20, Selected House Item ID Sending/Receiving Software H50c8, Selected House Item Finding Software H50c9, Row GPS Data Sending/Receiving Software H50c19, GPS Data Calculating Software H50c20a, Calculated GPS Data Sending/Receving Software H50c21, Selected Com. Device ID Sending/Receiving Software H50c14, and Selected Com. Device Finding Software H50c15. The sequence of each software program is described hereinafter.

[3528] Fig. 1104 illustrates the software programs stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1050). As described in the present drawing, House Item Pin-pointing Software Storage Area 20650c stores House Data Requesting Software 20650c19, House Data Sending/Receiving Software 20650c20, House Layout Data Displaying Software 20650c3, Room Layout Data Displaying Software 20650c6, House Item List Displaying Software 20650c6a, House Item Selecting Software 20650c7, Selected House Item ID Sending/Receiving Software 20650c8, Calculated GPS Data Sending/Receving Software 20650c21, Selected House Item Displaying Software 20650c12, Com. Device List Displaying Software 20650c12a, Com. Device Selecting Software 20650c13,

Selected Com. Device ID Sending/Receiving Software 20650c14, Row GPS Data Sending/Receiving Software 20650c19, and Selected Com. Device Displaying Software 20650c18. The sequence of each software program is described hereinafter.

[3529] Fig. 1105 illustrates the software program stored in House Item Pin-pointing Software Storage Area HI50c described in Fig. 1154 hereinafter. As described in the present drawing, House Item Pin-pointing Software Storage Area HI50c stores Row GPS Data Sending/Receiving Software HI50c19 of which the sequence is described hereinafter.

[3530] Figs. 1106 through 1108 illustrate the method to download the house data to Communication Device 200.

[3531] Fig. 1106 illustrates House Data Requesting Software H50c19 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1103) of Host H (Fig. 429) and House Data Requesting Software 20650c19 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1104) of Communication Device 200, which respectively sends and receives a house layout data request. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a house data request 50HDR (S1), which is received by Host H (S2). Here, the house data request

50HDR is a request signal described in Fig. 1107.

[3532] Fig. 1107 illustrates the data included in House Data Request 50HDR described in Fig. 1106. As described in the present drawing, House Data Request 50HDR includes Request Signal 50HDRa and House ID 50HDRb. Request Signal 50HDRa is a signal requesting to send to Communication Device 200 one of the house data stored in House Data Storage Area H50b1 (Fig. 1040) (the house#1 data in the present example). House ID 50HDRb is the house ID representing the identification of a house (house #1 in the present example).

[3533] Fig. 1108 illustrates House Data Sending/Receiving Software H50c20 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1103) of Host H (Fig. 429) and House Data Sending/Receiving Software 20650c20 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1104) of Communication Device 200, which respectively sends and receives a house layout data. Referring to the present drawing, Host H retrieves the house ID from House Layout Data Request 50HDR (Fig. 1107) (S1) and identifies the house data stored in House Data Storage Area H50b1 (Fig. 1040) (in the present example, House#1 Data Storage Area H50b1a is selected) (S2). Host H then

retrieves the house data from House#1 Data Storage Area H50b1a (Fig. 1041) (S3), and sends the data to Communication Device 200 (S4). CPU 211 (Fig. 1) of Communication Device 200 receives the house data (S5), and stores the data in House#1 Data Storage Area 20650b1a (Fig. 1052) (S6).

[3534] Fig. 1109 illustrates House Layout Data Displaying Software 20650c3 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1104) of Communication Device 200, which displays house layout data on LCD 201 (Fig. 1) of Communication Device 200. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the house layout data from House Layout Data Storage Area 20650b1a3 (Fig. 1053) (S1), and displays the data on LCD 201 (Fig. 1) (S2).

[3535] Fig. 1110 illustrates Room Layout Data Displaying Software 20650c6 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1104) of Communication Device 200, which displays room layout data on LCD 201 (Fig. 1) of Communication Device 200. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the room layout data from Room Layout Data Storage Area 20650b1a4 (Fig. 1053) (S1) and displays the

data on LCD 201 (Fig. 1) (S2).

[3536] Figs. 1111 through 1119 illustrate the method to display the house item icons on LCD 201 (Fig. 1) of Communication Device 200.

[3537] Fig. 1111 illustrates House Item List Displaying Software 20650c6a stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1104) of Communication Device 200. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the house item IDs, the house item icon image data, and the house item name data from House Item Icon Image Data Storage Area 20650b1a5 (Fig. 1053) (S1). CPU 211 then displays on LCD 201 (Fig. 1) a list of the house items including these data (S2).

[3538] Fig. 1112 illustrates House Item Selecting Software 20650c7 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1104) of Communication Device 200, which selects a house item from the house item list displayed on LCD 201 (Fig. 1) of Communication Device 200. Referring to the present drawing, a house item which is to be located by implementing the present function is selected from the list displayed in S2 of Fig. 1111 by utilizing Input Device 210 (Fig. 1) or via voice recognition

system (S1). CPU 211 (Fig. 1) then stores the selected house item ID in Selected House Item ID Storage Area 20650b3 (Fig. 1051) (S2).

[3539] Fig. 1113 illustrates Selected House Item ID Sending/Receiving Software H50c8 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1103) of Host H (Fig. 429) and Selected House Item ID Sending/Receiving Software 20650c8 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1104) of Communication Device 200, which respectively sends and receives house item ID selected by House Item Selecting Software 20650c7 described in Fig. 1112. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the selected house item ID from Selected House Item ID Storage Area 20650b3 (Fig. 1051) (S1). CPU 211 sends the selected house item ID (S2), which is received by Host H (S3). Host H then stores the selected house item ID in Selected House Item ID Storage Area H50b3 (Fig. 1040) (S4).

[3540] Fig. 1114 illustrates Selected House Item Finding Software H50c9 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1103) of Host H (Fig. 429), which finds the house item selected by House Item Selecting Software 20650c7 described in Fig. 1112. Referring to the present

drawing, Host H receives the ID signals from all house items via relays described in Figs. 1027 through 1030 (S1). Here, the ID signals are the signals emitted from the relays representing their identifications. Host H then detects the selected house item (S2).

[3541] Fig. 1115 illustrates Row GPS Data Sending/Receiving Software H50c19 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1103) of Host H (Fig. 429) and Row GPS Data Sending/Receiving Software HI50c19 stored in House Item Pin-pointing Software Storage Area HI50c (Fig. 1105) of House Item HI (Fig. 1151), which respectively sends and receives Row GPS Data 50RGD. Referring to the present drawing, House Item HI retrieves Row GPS Data 50RGD from the relays described in Figs. 1027 through 1030 (S1), and sends Row GPS Data 50RGD to Host H (S2). Host H then receives Row GPS Data 50RGD (S3), and stores the data in Work Area H50b2 (Fig. 1040) (S4).

[3542] Fig. 1116 illustrates the data included in Row GPS Data 50RGD described in Fig. 1115. Referring to the present drawing, Row GPS Data 50RGD comprises a relay ID and a row GPS data. Here, the relay ID is the identification of the relay and the row GPS data is a primitive data utilized to

produce a calculated GPS data. Assuming that House Item HI, Glasses 50GL (Fig. 1022) for example, is placed in Room A. As described in Fig. 1027, four relays, i.e., R50A1, R50A2, R50A3, and R50A4 are installed in Room A. House Item HI (Glasses 50GL) receives four Row GPS Data 50RGD, each of which from R50A1, R50A2, R50A3, and R50A4, respectively, namely, the first Row GPS Data 50RGD of which the relay ID is R50A1 and of which the row GPS data is the one received from relay R50A1; the second Row GPS Data 50RGD of which the relay ID is R50A2 and of which the row GPS data is the one received from relay R50A2; the third Row GPS Data 50RGD of which the relay ID is R50A3 and of which the row GPS data is the one received from relay R50A3; and the fourth Row GPS Data 50RGD of which the relay ID is R50A4 and of which the row GPS data is the one received from relay R50A4.

[3543] Fig. 1117 illustrates GPS Data Calculating Software H50c20a stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1103) of Host H (Fig. 429), which produces a calculated GPS data. Referring to the present drawing, Host H produces the calculated GPS data by utilizing a plurality of Row GPS Data 50RGD stored in Work Area H50b2 (Fig. 1040) (S1), and stores the calculated GPS

data in Work Area H50b2 (S2). Here, the calculated GPS data is the data representing the location of House Item HI, Glasses 50GL (Fig. 1022) for example, in (x, y, z) format.

[3544] Fig. 1118 illustrates Calculated GPS Data Sending/Receving Software H50c21 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1103) of Host H (Fig. 429) and Calculated GPS Data Sending/Receving Software 20650c21 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1104) of Communication Device 200, which respectively sends and receives the calculated GPS data. Referring to the present drawing, Host H sends the calculated GPS data to Communication Device 200 (S1). CPU 211 (Fig. 1) of Communication Device 200 receives the calculated GPS Data from Host H (S2), and stores the data in Work Area 20650b2 (Fig. 1051) (S3).

[3545] Fig. 1119 illustrates Selected House Item Displaying Software 20650c12 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1104) of Communication Device 200, which displays the location of the house item selected by House Item Selecting Software 20650c7 described in Fig. 1112. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves

the calculated GPS Data from Work Area 20650b2 (Fig. 1051) (S1) and further retrieves the house item icon image data from House Item Icon Image Data Storage Area 20650b1a5 (Fig. 1053) by referring to the selected house item ID stored in Selected House Item ID Storage Area 20650b3 (Fig. 1051) (S2). CPU 211 then displays the house item icon image data on LCD 201 (Fig. 1) at the location corresponding to the calculated GPS data stored in S3 of Fig. 1118 (S3).

[3546] Figs. 1120 through 1128 illustrate the method to display the communication device icons on LCD 201 (Fig. 1) of Communication Device 200.

[3547] Fig. 1120 illustrates Com. Device List Displaying Software 20650c12a stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1104) of Communication Device 200. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the communication device IDs, the communication device icon image data, and the user name data from Com. Device Icon Image Data Storage Area 20650b1a6 (Fig. 1083) (S1). CPU 211 then displays on LCD 201 (Fig. 1) a list of the communication devices including these data (S2).

[3548] Fig. 1121 illustrates Com. Device Selecting Software

20650c13 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1104) of Communication Device 200, which selects a communication device from the communication device list displayed on LCD 201 (Fig. 1) of Communication Device 200. Referring to the present drawing, a communication device which is to be located by implementing the present function is selected from the list displayed in S2 of Fig. 1120 by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) then stores the selected communication device ID in Selected Com. Device ID Storage Area 20650b4 (Fig. 1051) (S2).

[3549] Fig. 1122 illustrates Selected Com. Device ID Sending/Receiving Software H50c14 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1103) of Host H (Fig. 429) and Selected Com. Device ID Sending/Receiving Software 20650c14 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1104) of Communication Device 200, which respectively sends and receives the communication device ID selected by Com. Device Selecting Software 20650c13 described in Fig. 1121. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the selected communication de-

vice ID from Selected Com. Device ID Storage Area 20650b4 (Fig. 1051) (S1). CPU 211 sends the selected communication device ID (S2), which is received by Host H (S3). Host H then stores the selected communication device ID in Selected Com. Device ID Storage Area H50b4 (Fig. 1040) (S4).

[3550] Fig. 1123 illustrates Selected Com. Device Finding Software H50c15 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1103) of Host H (Fig. 429), which finds the communication device selected by Com. Device Selecting Software 20650c13 described in Fig. 1121. Referring to the present drawing, Host H receives the ID signals from all communication devices via relays described in Figs. 1027 through 1030 (S1). Here, the ID signals are the signals emitted from the relays representing their identifications. Host H then detects the selected communication device therefrom (S2).

[3551] Fig. 1124 illustrates Row GPS Data Sending/Receiving Software H50c19 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1103) of Host H (Fig. 429) and Row GPS Data Sending/Receiving Software 20650c19 stored in House Item Pin-pointing Software Storage Area HI50c (Fig. 1104) of Communication Device 200, which

respectively sends and receives Row GPS Data 50RGD. Referring to the present drawing, Communication Device 200 retrieves Row GPS Data 50RGD from the relays described in Figs. 1027 through 1030 (S1), and sends Row GPS Data 50RGD to Host H (S2). Host H then receives Row GPS Data 50RGD (S3), and stores the data in Work Area H50b2 (Fig. 1040) (S4).

[3552] Fig. 1125 illustrates the data included in Row GPS Data 50RGD described in Fig. 1124. Referring to the present drawing, Row GPS Data 50RGD comprises a relay ID and a row GPS data. Here, the relay ID is the identification of the relay and the row GPS data is a primitive data utilized to produce a calculated GPS data. Assuming that Communication Device 200 is placed in Room A. As described in Fig. 1027, four relays, i.e., R50A1, R50A2, R50A3, and R50A4 are installed in Room A. Communication Device 200 receives four Row GPS Data 50RGD, each of which from R50A1, R50A2, R50A3, and R50A4, respectively, namely, the first Row GPS Data 50RGD of which the relay ID is R50A1 and of which the row GPS data is the one received from relay R50A1; the second Row GPS Data 50RGD of which the relay ID is R50A2 and of which the row GPS data is the one received from relay R50A2; the third Row

GPS Data 50RGD of which the relay ID is R50A3 and of which the row GPS data is the one received from relay R50A3; and the fourth Row GPS Data 50RGD of which the relay ID is R50A4 and of which the row GPS data is the one received from relay R50A4.

[3553] Fig. 1126 illustrates GPS Data Calculating Software H50c20a stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1103) of Host H (Fig. 429), which produces a calculated GPS data. Referring to the present drawing, Host H produces the calculated GPS data by utilizing a plurality of Row GPS Data 50RGD stored in Work Area H50b2 (Fig. 1040) (S1), and stores the calculated GPS data in Work Area H50b2 (S2). Here, the calculated GPS data is the data representing the location of Communication Device 200 in (x, y, z) format.

[3554] Fig. 1127 illustrates Calculated GPS Data Sending/Receving Software H50c21 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1103) of Host H (Fig. 429) and Calculated GPS Data Sending/Receving Software 20650c21 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1104) of Communication Device 200, which respectively sends and receives the calculated GPS data. Referring to the present drawing, Host H sends

the calculated GPS data to Communication Device 200 (S1). CPU 211 (Fig. 1) of Communication Device 200 receives the calculated GPS Data from Host H (S2), and stores the data in Work Area 20650b2 (Fig. 1051) (S3).

[3555] Fig. 1128 illustrates Selected Com. Device Displaying Software 20650c18 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1059) of Communication Device 200, which displays the location of the communication device selected by Com. Device Selecting Software 20650c13 described in Fig. 1121. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the calculated GPS Data from Work Area 20650b2 (Fig. 1051) (S1) and further retrieves the communication device icon image data from Com. Device Icon Image Data Storage Area 20650b1a6 (Fig. 1053) by referring to the selected communication device ID stored in Selected Com. Device ID Storage Area 20650b4 (Fig. 1051) (S2). CPU 211 then displays the communication device icon image data on LCD 201 (Fig. 1) at the location corresponding to the calculated GPS data stored in S3 of Fig. 1127 (S3).

[3556] *<<House Item Pin-pointing Function -- Another Embodiment03>>*

[3557] Figs. 1129 through 1150 illustrate another embodiment

to implement the present function. Two Communication Devices 200, Device A and Device B, are utilized in this embodiment.

[3558] Fig. 1129 illustrates the software programs stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1039). As described in the present drawing, House Item Pin-pointing Software Storage Area H50c stores House Data Requesting Software H50c19 and House Data Sending/Receiving Software H50c20. The sequence of each software program is described hereinafter.

[3559] Fig. 1130 illustrates the software programs stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1050) of Device A. As described in the present drawing, House Item Pin-pointing Software Storage Area 20650c stores House Data Requesting Software 20650c19, House Data Sending/Receiving Software 20650c20, House Layout Data Displaying Software 20650c3, Room Layout Data Displaying Software 20650c6, House Item List Displaying Software 20650c6a, House Item Selecting Software 20650c7, Selected House Item Finding Software 20650c21, Row GPS Data Sending/Receiving Software 20650c19, GPS Data Calculating Software 20650c20, Selected House Item Displaying Software

20650c12, Com. Device List Displaying Software 20650c12a, Com. Device Selecting Software 20650c13, Selected Com. Device Finding Software H50c15, and Selected Com. Device Displaying Software 20650c18. The sequence of each software program is described hereinafter.

[3560] Fig. 1131 illustrates the software programs stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1050) of Device B. As described in the present drawing, House Item Pin-pointing Software Storage Area 20650c stores Row GPS Data Sending/Receiving Software 20650c19 of which the sequence is described hereinafter.

[3561] Fig. 1131a illustrates the software program stored in House Item Pin-pointing Software Storage Area HI50c described in Fig. 1154 hereinafter. As described in the present drawing, House Item Pin-pointing Software Storage Area HI50c stores Row GPS Data Sending/Receiving Software HI50c19 of which the sequence is described hereinafter.

[3562] Figs. 1132 through 1134 illustrate the method to download the house data to Communication Device 200.

[3563] Fig. 1132 illustrates House Data Requesting Software H50c19 stored in House Item Pin-pointing Software Stor-

age Area H50c (Fig. 1129) of Host H (Fig. 429) and House Data Requesting Software 20650c19 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1130) of Device A, which respectively sends and receives a house layout data request. Referring to the present drawing, CPU 211 (Fig. 1) of Device A sends a house data request 50HDR (S1), which is received by Host H (S2). Here, the house data request 50HDR is a request signal described in Fig. 1133.

[3564] Fig. 1133 illustrates the data included in House Data Request 50HDR described in Fig. 1132. As described in the present drawing, House Data Request 50HDR includes Request Signal 50HDRa and House ID 50HDRb. Request Signal 50HDRa is a signal requesting to send to Device A one of the house data stored in House Data Storage Area H50b1 (Fig. 1040) (the house#1 data in the present example). House ID 50HDRb is the house ID representing the identification of a house (house #1 in the present example).

[3565] Fig. 1134 illustrates House Data Sending/Receiving Software H50c20 stored in House Item Pin-pointing Software Storage Area H50c (Fig. 1129) of Host H (Fig. 429) and House Data Sending/Receiving Software 20650c20 stored

in House Item Pin-pointing Software Storage Area 20650c (Fig. 1130) of Device A, which respectively sends and receives a house layout data. Referring to the present drawing, Host H retrieves the house ID from House Layout Data Request 50HDR (Fig. 1133) (S1) and identifies the house data stored in House Data Storage Area H50b1 (Fig. 1040) (in the present example, House#1 Data Storage Area H50b1a is selected) (S2). Host H then retrieves the house data from House#1 Data Storage Area H50b1a (Fig. 1041) (S3), and sends the data to Device A (S4). CPU 211 (Fig. 1) of Device A receives the house data (S5), and stores the data in House#1 Data Storage Area 20650b1a (Fig. 1052) (S6).

[3566] Fig. 1135 illustrates House Layout Data Displaying Software 20650c3 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1130) of Device A, which displays house layout data on LCD 201 (Fig. 1) of Device A. Referring to the present drawing, CPU 211 (Fig. 1) of Device A retrieves the house layout data from House Layout Data Storage Area 20650b1a3 (Fig. 1053) (S1), and displays the data on LCD 201 (Fig. 1) (S2).

[3567] Fig. 1136 illustrates Room Layout Data Displaying Software 20650c6 stored in House Item Pin-pointing Software

Storage Area 20650c (Fig. 1130) of Device A, which displays room layout data on LCD 201 (Fig. 1) of Device A. Referring to the present drawing, CPU 211 (Fig. 1) of Device A retrieves the room layout data from Room Layout Data Storage Area 20650b1a4 (Fig. 1053) (S1) and displays the data on LCD 201 (Fig. 1) (S2).

[3568] Figs. 1137 through 1143 illustrate the method to display the house item icons on LCD 201 (Fig. 1) of Communication Device 200.

[3569] Fig. 1137 illustrates House Item List Displaying Software 20650c6a stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1130) of Device A. Referring to the present drawing, CPU 211 (Fig. 1) of Device A retrieves the house item IDs, the house item icon image data, and the house item name data from House Item Icon Image Data Storage Area 20650b1a5 (Fig. 1053) (S1). CPU 211 then displays on LCD 201 (Fig. 1) a list of the house items including these data (S2).

[3570] Fig. 1138 illustrates House Item Selecting Software 20650c7 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1130) of Device A, which selects a house item from the house item list displayed on LCD 201 (Fig. 1) of Device A. Referring to the present drawing, a

house item which is to be located by implementing the present function is selected from the list displayed in S2 of Fig. 1137 by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) then stores the selected house item ID in Selected House Item ID Storage Area 20650b3 (Fig. 1051) (S2).

[3571] Fig. 1139 illustrates Selected House Item Finding Software 20650c21 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1130) of Device A, which finds the house item selected by House Item Selecting Software 20650c7 described in Fig. 1138. Referring to the present drawing, CPU 211 (Fig. 1) of Device A receives the ID signals from all house items via relays described in Figs. 1027 through 1030 (S1). Here, the ID signals are the signals emitted from the relays representing their identifications. Device A then detects the selected house item (S2).

[3572] Fig. 1140 illustrates Row GPS Data Sending/Receiving Software 20650c19 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1130) of Device A and Row GPS Data Sending/Receiving Software HI50c19 stored in House Item Pin-pointing Software Storage Area HI50c (Fig. 1131a) of House Item HI (Fig. 1151), which respectively sends and receives Row GPS Data 50RGD. Referring

to the present drawing, House Item HI retrieves Row GPS Data 50RGD from the relays described in Figs. 1027 through 1030 (S1), and sends Row GPS Data 50RGD to Device A (S2). Device A then receives Row GPS Data 50RGD (S3), and stores the data in Work Area 20650b2 (Fig. 1051) (S4).

[3573] Fig. 1141 illustrates the data included in Row GPS Data 50RGD described in Fig. 1140. Referring to the present drawing, Row GPS Data 50RGD comprises a relay ID and a row GPS data. Here, the relay ID is the identification of the relay and the row GPS data is a primitive data utilized to produce a calculated GPS data. Assuming that House Item HI, Glasses 50GL (Fig. 1022) for example, is placed in Room A. As described in Fig. 1027, four relays, i.e., R50A1, R50A2, R50A3, and R50A4 are installed in Room A. House Item HI (Glasses 50GL) receives four Row GPS Data 50RGD, each of which from R50A1, R50A2, R50A3, and R50A4, respectively, namely, the first Row GPS Data 50RGD of which the relay ID is R50A1 and of which the row GPS data is the one received from relay R50A1; the second Row GPS Data 50RGD of which the relay ID is R50A2 and of which the row GPS data is the one received from relay R50A2; the third Row GPS Data 50RGD of which

the relay ID is R50A3 and of which the row GPS data is the one received from relay R50A3; and the fourth Row GPS Data 50RGD of which the relay ID is R50A4 and of which the row GPS data is the one received from relay R50A4.

[3574] Fig. 1142 illustrates GPS Data Calculating Software 20650c20 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1130) of Device A, which produces a calculated GPS data. Referring to the present drawing, Device A produces the calculated GPS data by utilizing a plurality of Row GPS Data 50RGD stored in Work Area 20650b2 (Fig. 1051) (S1), and stores the calculated GPS data in Work Area 20650b2 (S2). Here, the calculated GPS data is the data representing the location of House Item HI, Glasses 50GL (Fig. 1022) for example, in (x, y, z) format.

[3575] Fig. 1143 illustrates Selected House Item Displaying Software 20650c12 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1130) of Device A, which displays the location of the house item selected by House Item Selecting Software 20650c7 described in Fig. 1138. Referring to the present drawing, CPU 211 (Fig. 1) of Device A retrieves the calculated GPS Data from Work Area 20650b2 (Fig. 1051) (S1) and further retrieves the house

item icon image data from House Item Icon Image Data Storage Area 20650b1a5 (Fig. 1053) by referring to the selected house item ID stored in Selected House Item ID Storage Area 20650b3 (Fig. 1051) (S2). CPU 211 then displays the house item icon image data on LCD 201 (Fig. 1) at the location corresponding to the calculated GPS data stored in S2 of Fig. 1142 (S3).

[3576] Figs. 1144 through 1150 illustrate the method to display the communication device icons on LCD 201 (Fig. 1) of Communication Device 200.

[3577] Fig. 1144 illustrates Com. Device List Displaying Software 20650c12a stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1130) of Device A. Referring to the present drawing, CPU 211 (Fig. 1) of Device A retrieves the communication device IDs, the communication device icon image data, and the user name data from Com. Device Icon Image Data Storage Area 20650b1a6 (Fig. 1083) (S1). CPU 211 then displays on LCD 201 (Fig. 1) a list of the communication devices including these data (S2).

[3578] Fig. 1145 illustrates Com. Device Selecting Software 20650c13 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1130) of Device A, which selects a communication device from the communication

device list displayed on LCD 201 (Fig. 1) of Device A. Referring to the present drawing, a communication device which is to be located by implementing the present function is selected from the list displayed in S2 of Fig. 1144 by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) then stores the selected communication device ID in Selected Com. Device ID Storage Area 20650b4 (Fig. 1051) (S2).

[3579] Fig. 1146 illustrates Selected Com. Device Finding Software 20650c15 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1130) of Device A, which finds the communication device selected by Com. Device Selecting Software 20650c13 described in Fig. 1145. Referring to the present drawing, Device A receives the ID signals from all communication devices via relays described in Figs. 1027 through 1030 (S1). Here, the ID signals are the signals emitted from the relays representing their identifications. Device A then detects the selected communication device (S2).

[3580] Fig. 1147 illustrates Row GPS Data Sending/Receiving Software 20650c19 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1130) of Device A and Row GPS Data Sending/Receiving Software 20650c19

stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1131) of Device B, which respectively sends and receives Row GPS Data 50RGD. Referring to the present drawing, Device B retrieves Row GPS Data 50RGD from the relays described in Figs. 1027 through 1030 (S1), and sends Row GPS Data 50RGD to Device A (S2). Device A then receives Row GPS Data 50RGD (S3), and stores the data in Work Area 20650b2 (Fig. 1040) (S4).

[3581] Fig. 1148 illustrates the data included in Row GPS Data 50RGD described in Fig. 1147. Referring to the present drawing, Row GPS Data 50RGD comprises a relay ID and a row GPS data. Here, the relay ID is the identification of the relay and the row GPS data is a primitive data utilized to produce a calculated GPS data. Assuming that House Item HI, Glasses 50GL (Fig. 1022) for example, is placed in Room A. As described in Fig. 1027, four relays, i.e., R50A1, R50A2, R50A3, and R50A4 are installed in Room A. House Item HI (Glasses 50GL) receives four Row GPS Data 50RGD, each of which from R50A1, R50A2, R50A3, and R50A4, respectively, namely, the first Row GPS Data 50RGD of which the relay ID is R50A1 and of which the row GPS data is the one received from relay R50A1; the second Row GPS Data 50RGD of which the relay ID is

R50A2 and of which the row GPS data is the one received from relay R50A2; the third Row GPS Data 50RGD of which the relay ID is R50A3 and of which the row GPS data is the one received from relay R50A3; and the fourth Row GPS Data 50RGD of which the relay ID is R50A4 and of which the row GPS data is the one received from relay R50A4.

[3582] Fig. 1149 illustrates GPS Data Calculating Software 20650c20 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1130) of Device A, which produces a calculated GPS data. Referring to the present drawing, Device A produces the calculated GPS data by utilizing a plurality of Row GPS Data 50RGD stored in Work Area 20650b2 (Fig. 1040) (S1), and stores the calculated GPS data in Work Area 20650b2 (S2). Here, the calculated GPS data is the data representing the location of House Item HI, Glasses 50GL (Fig. 1022) for example, in (x, y, z) format.

[3583] Fig. 1150 illustrates illustrates Selected Com. Device Displaying Software 20650c18 stored in House Item Pin-pointing Software Storage Area 20650c (Fig. 1130) of Device A, which displays the location of the communication device selected by Com. Device Selecting Software 20650c13 described in Fig. 1145. Referring to the present

drawing, CPU 211 (Fig. 1) of Device A retrieves the calculated GPS Data from Work Area 20650b2 (Fig. 1051) (S1) and further retrieves the communication device icon image data from Com. Device Icon Image Data Storage Area 20650b1a6 (Fig. 1053) by referring to the selected communication device ID stored in Selected Com. Device ID Storage Area 20650b4 (Fig. 1051) (S2). CPU 211 of Device A then displays the communication device icon image data on LCD 201 (Fig. 1) at the location corresponding to the calculated GPS data stored in S2 of Fig. 1149 (S3).

[3584] *<<House Item Pin-pointing Function -- House Item HI>>*

[3585] Figs. 1151 through 1154 illustrate the data and software programs included in House Item HI. Here, House Item HI is any item placed in a house, such as Glasses 50GL (Fig. 1022), Book 50BK (Fig. 1023), Pen 50PN (Fig. 1024), and Nail Clipper 50NC (Fig. 1025), with a small transmitter attached thereto or embedded therein (e.g., Wireless Transmitter 50GLa (Fig. 1022), Wireless Transmitter 50BKa (Fig. 1023), Wireless Transmitter 50PNa (Fig. 1024), and Wireless Transmitter 50NCa (Fig. 1025)).

[3586] Fig. 1151 illustrates the storage area included in House Item HI. As described in the present drawing, House Item HI includes House Item Pin-pointing Information Storage

Area HI50a of which the data and the software programs stored therein are described in 1152.

[3587] Fig. 1152 illustrates the storage areas included in House Item Pin-pointing Information Storage Area HI50a (Fig. 1151). As described in the present drawing, House Item Pin-pointing Information Storage Area HI50a includes House Item Pin-pointing Data Storage Area HI50b and House Item Pin-pointing Software Storage Area HI50c. House Item Pin-pointing Data Storage Area HI50b stores the data necessary to implement the present function on the side of House Item HI (Fig. 1151), such as the ones described hereinbefore. House Item Pin-pointing Software Storage Area HI50c stores the software programs necessary to implement the present function on the side of House Item HI, such as the ones described hereinbefore.

[3588] *<<House Item Pin-pointing Function -- Summary>>*

[3589] (1) A computer comprising a microphone, a speaker, a display, an input device and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and a house item pin-pointing mode, a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is imple-

mented, a house item location which represents the location of an house item existing in a house is displayed on said display when said house item pin-pointing mode is implemented.

[3590] (2) A house item pin-pointing software which displays a house item location which represents the location of an house item existing in a house on a display of a computer by retrieving location data representing the location of said house item in said house.

[3591] (3) A house item pin-pointing system comprising a computer and a house item wherein a house item location which represents the location of an house item existing in a house is displayed on a display of said computer by retrieving location data representing the location of said house item in said house.

[3592] (4) Said display further displays the location of said computer.

[3593] *<<Membership Administrating Function>>*

[3594] Figs. 1153 through 1188 illustrate the membership administrating function in which Host H (Fig. 429) allows only the users of Communication Device 200 who have paid the monthly fee to access Host H to implement the function(s). Here, the function(s) for purposes of imple-

menting the present function include any and all functions described in this specification which are implemented by accessing Host H and/or which require to access Host H to implement thereof. The present function may be implemented prior to the functions described in this specification which are implemented by accessing Host H and/or which require to access Host H to implement thereof.

[3595] Fig. 1153 illustrates the storage area included in Host H (Fig. 429). As described in the present drawing, Host H includes Membership Administrating Information Storage Area H51a of which the data and the software programs stored therein are described in Fig. 1154.

[3596] Fig. 1154 illustrates the storage areas included in Membership Administrating Information Storage Area H51a (Fig. 1153). As described in the present drawing, Membership Administrating Information Storage Area H51a includes Membership Administrating Data Storage Area H51b and Membership Administrating Software Storage Area H51c. Membership Administrating Data Storage Area H51b stores the data necessary to implement the present function on the side of Host H (Fig. 429), such as the ones described in Figs. 1155 through 1159. Membership Administrating Software Storage Area H51c stores the soft-

ware programs necessary to implement the present function on the side of Host H, such as the ones described in Fig. 1160.

[3597] Fig. 1155 illustrates the storage areas included in Membership Administrating Data Storage Area H51b (Fig. 1154). As described in the present drawing, Membership Administrating Data Storage Area H51b (Fig. 1154) includes Payment Status Data Storage Area H51b1, Password Data Storage Area H51b2, Service Type Data Storage Area H51b3, Users' Service Type Data Storage Area H51b4, and Authentication Request Storage Area H51b5. Payment Status Data Storage Area H51b1 stores the data described in Fig. 1156. Password Data Storage Area H51b2 stores the data described in Fig. 1157. Service Type Data Storage Area H51b3 stores the data described in Fig. 1158. Users' Service Type Data Storage Area H51b4 stores the data described in Fig. 1159. Authentication Request Storage Area H51b5 stores Authentication Request 51AR sent from Communication Device 200 described in Fig. 1171.

[3598] Fig. 1156 illustrates the data stored in Payment Status Data Storage Area H51b1 (Fig. 1155). As described in the present drawing, Payment Status Data Storage Area H51b1

comprises two columns, i.e., 'User ID' and 'Payment Status Data'. Column 'User ID' stores the user IDs, and each user ID represents the identification of the user of Communication Device 200. Column 'Payment Status Data' stores the payment status data, and each payment status data represents the payment status of the monthly fee of the user of the corresponding user ID. The payment status is identified by either "1" or "0" wherein "1" indicates that the monthly fee is duly paid and "0" indicates that the monthly fee is not duly paid. In the example described in the present drawing, the following data are stored in Payment Status Data Storage Area H51b1: the user ID 'User #1' of which the corresponding payment status data is '1'; the user ID 'User #2' of which the corresponding payment status data is '1'; the user ID 'User #3' of which the corresponding payment status data is '0'; and the user ID 'User #4' of which the corresponding payment status data is '1'.

[3599] Fig. 1157 illustrates the data stored in Password Data Storage Area H51b2 (Fig. 1155). As described in the present drawing, Password Data Storage Area H51b2 comprises two columns, i.e., 'User ID' and 'Password Data'. Column 'User ID' stores the user IDs, and each user ID represents the identification of the user of Communica-

tion Device 200. Column 'Password Data' stores the password data, and each password data represents the password created by the user of the corresponding user ID. In the example described in the present drawing, Password Data Storage Area H51b2 stores the following data: user ID 'User #1' of which the corresponding password data is 'Password #1'; user ID 'User #2' of which the corresponding password data is 'Password #2'; user ID 'User #3' of which the corresponding password data is 'Password #3'; and user ID 'User #4' of which the corresponding password data is 'Password #4'. The password data may be any alphanumeric data of any lengh.

[3600] Fig. 1158 illustrates the data stored in Service Type Data Storage Area H51b3 (Fig. 1155). As described in the present drawing, Service Type Data Storage Area H51b3 comprises two columns, i.e., 'Service Type ID' and 'Available Service Type Data'. Column 'Service Type ID' stores the service type ID, and each service type ID represents the identification of the available service type data stored in column 'Available Service Type Data'. Column 'Available Service Type Data' stores the available service type data, and each available service type data represents the types of the functions available to the user of Communication

Device 200. In the example described in the present drawing, Service Type Data Storage Area H51b3 stores the following data: service type ID 'Service Type A' of which the functions available to the user of Communication Device 200 are 'All Functions'; service type ID 'Service Type B' of which the functions available to the user of Communication Device 200 are 'Function #1, #2, #3'; and service type ID 'Service Type C' of which the functions available to the user of Communication Device 200 are 'Function #1, #2, #3, #4, #5, #6'. Here, 'All Functions' means all functions described in this specification, and each function labeled as "#1", "#2", "#3", "#4", "#5", and "#6" may be any function described in the specification.

[3601] Fig. 1159 illustrates the data stored in Users' Service Type Data Storage Area H51b4 (Fig. 1155). As described in the present drawing, Users' Service Type Data Storage Area H51b4 comprises two columns, i.e., 'User ID' and 'Users' Service Type Data'. Column 'User ID' stores the user IDs, and each user ID represents the identification of the user of Communication Device 200. Column ' Users' Service Type Data' stores the users'' service type data, and each user's service type data represents the service type available to the user of the corresponding user ID. In the ex-

ample described in the present drawing, Users' Service Type Data Storage Area H51b4 stores the following data: user ID 'User #1' of which the corresponding user's service type data is 'Service Type A'; user ID 'User #2' of which the corresponding user's service type data is 'Service Type A'; user ID 'User #3' of which the corresponding user's service type data is 'Service Type B'; and user ID 'User #4' of which the corresponding user's service type data is 'Service Type C'. Referring to Figs. 1158 and 1159, the user whose user ID is 'User #1' can enjoy all functions described in this specification; the user whose user ID is 'User #2' can enjoy all functions described in this specification; the user whose user ID is 'User #3' may enjoy functions #1, #2, and #3 (i.e., three functions described in this specification); and the user whose user ID is 'User #4' may enjoy all functions #1, #2, #3, #4, #5, and #6 (i.e., predetermined six functions described in this specification).

[3602] Fig. 1160 illustrates the software programs stored in Membership Administrating Software Storage Area H51c (Fig. 1154). As described in the present drawing, Membership Administrating Software Storage Area H51c stores Authentication Request Receiving Software H51c3, 1st Authentication Processing Software H51c4, 2nd Authentica-

tion Processing Software H51c5, 3rd Authentication Processing Software H51c6, and Payment Status Updating Software H51c7. Authentication Request Receiving Software H51c3 is the software program described in Fig. 1172. 1st Authentication Processing Software H51c4 is the software program described in Fig. 1173. 2nd Authentication Processing Software H51c5 is the software program described in Fig. 1174. 3rd Authentication Processing Software H51c6 is the software program described in Fig. 1187. Payment Status Updating Software H51c7 is the software program described in Fig. 1175.

[3603] Fig. 1161 illustrates the storage area included in RAM 206 (Fig. 1) of the individual Communication Device 200. As described in the present drawing, RAM 206 includes Membership Administrating Information Storage Area 20651a of which the data and the software programs stored therein are described in Fig. 1162.

[3604] The data and software programs stored in Membership Administrating Information Storage Area 20651a (Fig. 1161) are downloaded from Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[3605] Fig. 1162 illustrates the storage areas included in Membership Administrating Information Storage Area 20651a

(Fig. 1161). As described in the present drawing, Membership Administrating Information Storage Area 20651a includes Membership Administrating Data Storage Area 20651b and Membership Administrating Software Storage Area 20651c. Membership Administrating Data Storage Area 20651b stores the data necessary to implement the present function on the side of Communication Device 200, such as the ones described in Figs. 1163 through 1167. Membership Administrating Software Storage Area 20651c stores the software programs necessary to implement the present function on the side of Communication Device 200, such as the ones described in Fig. 1168.

[3606] Fig. 1163 illustrates the storage areas included in Membership Administrating Data Storage Area 20651b (Fig. 1162). As described in the present drawing, Membership Administrating Data Storage Area 20651b (Fig. 1162) includes Payment Status Data Storage Area 20651b1, Password Data Storage Area 20651b2, Service Type Data Storage Area 20651b3, User's Service Type Data Storage Area 20651b4, and Available Function Data Storage Area 20651b5. Payment Status Data Storage Area 20651b1 stores the data described in Fig. 1164. Password Data Storage Area 20651b2 stores the data described in Fig.

1165. User's Service Type Data Storage Area 20651b4 stores the data described in Fig. 1166. Available Function Data Storage Area 20651b5 stores the data described in Fig. 1167.

[3607] Fig. 1164 illustrates the data included in Payment Status Data Storage Area 20651b1 (Fig. 1163). As described in the present drawing, Payment Status Data Storage Area 20651b1 comprises two columns, i.e., 'User ID' and 'Payment Status Data'. Column 'User ID' stores the user ID which represents the identification of the individual user of Communication Device 200. Column 'Payment Status Data' stores the payment status data which represents the payment status of the monthly fee of the user. The payment status is identified by either "1" or "0" wherein "1" indicates that the monthly fee is duly paid and "0" indicates that the monthly fee is not duly paid. In the example described in the present drawing, the following data are stored in Payment Status Data Storage Area H51b1: the user ID 'User #1' of which the corresponding payment status data is '1'. These data indicate that the user ID of the individual user of Communication Device 200 is 'User #1' and the user has duly paid the monthly fee.

[3608] Fig. 1165 illustrates the data stored in Password Data

Storage Area 20651b2 (Fig. 1163). As described in the present drawing, Password Data Storage Area 20651b2 comprises two columns, i.e., 'User ID' and 'Password Data'. Column 'User ID' stores the user ID which represents the identification of the user of Communication Device 200. Column 'Password Data' stores the password data which represents the password created by the user. In the example described in the present drawing, Password Data Storage Area 20651b2 stores the following data: user ID 'User #1' of which the corresponding password data is 'Password #1'. These data indicate that the user ID of this individual user of Communication Device 200 is 'User #1' and his/her password is 'Password #1'. The password data may be any alphanumeric data of any lengh.

[3609] Fig. 1166 illustrates the data stored in User's Service Type Data Storage Area 20651b4 (Fig. 1163). As described in the present drawing, User's Service Type Data Storage Area 20651b4 comprises two columns, i.e., 'User ID' and 'User's Service Type Data'. Column 'User ID' stores the user ID which represents the identification of the individual user of Communication Device 200. Column 'User's Service Type Data' stores the user's service type data which represents the service type available to the user. In the

example described in the present drawing, User's Service Type Data Storage Area 20651b4 stores the following data: user ID 'User #1' of which the corresponding user's service type data is 'Service Type A'. Referring to Figs. 1158 and 1166, the user ID of Communication Device 200 is 'User #1', and he/she can enjoy all functions described in this specification.

[3610] Fig. 1167 illustrates the data stored in Available Function Data Storage Area 20651b5 (Fig. 1163). As described in the present drawing, Available Function Data Storage Area 20651b5 comprises one column, i.e., 'Function ID'. Column 'Function ID' stores the function IDs, and each function ID represents the identification of the function described in this specification. In the present example, the user's service type data stored in User's Service Type Data Storage Area 20651b4 (Fig. 1166) is 'Service Type A', therefore, the function IDs of all functions described in this specification are stored in Available Function Data Storage Area 20651b5.

[3611] Fig. 1168 illustrates the software programs stored in Membership Administrating Software Storage Area 20651c (Fig. 1162). As described in the present drawing, Membership Administrating Software Storage Area 20651c

stores Function Selecting Software 20651c1 and Authentication Request Sending Software 20651c2. Function Selecting Software 20651c1 is the software program described in Fig. 1169. Authentication Request Sending Software 20651c2 is the software program described in Fig. 1170.

[3612] Fig. 1169 illustrates Function Selecting Software 20651c1 stored in Membership Administrating Software Storage Area 20651c (Fig. 1168) of Communication Device 200, which enables the user of Communication Device 200 to select function(s) from a function list displayed on LCD 201 (Fig. 1). Referring to the present drawing, CPU 211 (Fig. 1) retrieves the available function data from Available Function Data Storage Area 20651b5 (Fig. 1163), and creates a function list therefrom (S1). The fuction list is displayed on LCD 201 (S2), and one or more functions to be implemented are selected from the list by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S3).

[3613] Fig. 1170 illustrates Authentication Request Sending Software 20651c2 stored in Membership Administrating Software Storage Area 20651c (Fig. 1168) of Communication Device 200, which sends to Host H (Fig. 429) an authentication request. Referring to the present drawing, CPU 211

(Fig. 1) sends Authentication Request 51AR To Host H (S1).

[3614] Fig. 1171 illustrates the data included in Authentication Request 51AR described in Fig. 1170. As described in the present drawing, Authentication Request 51AR includes the user ID and the function ID. Here, the user ID is the one retrieved from column 'User ID' of Payment Status Data Storage Area 20651b1 (Fig. 1164), i.e., 'User #1'. The function ID is the one selected in S3 of Fig. 1169.

[3615] Fig. 1172 illustrates Authentication Request Receiving Software H51c3 stored in Membership Administrating Software Storage Area H51c (Fig. 1160) of Host H (Fig. 429), which receives Authentication Request 51AR (Fig. 1171) sent from Communication Device 200. Referring to the present drawing, Host H receives Authentication Request 51AR (Fig. 1171) (S1), which is stored in Authentication Request Storage Area H51b5 (Fig. 1155) (S2).

[3616] Fig. 1173 illustrates 1st Authentication Processing Software H51c4 stored in Membership Administrating Software Storage Area H51c (Fig. 1160) of Host H (Fig. 429), which identifies the payment status of the user of Communication Device 200. Referring to the present drawing, Host H retrieves the user ID from Authentication Request

Storage Area H51b5 (Fig. 1155) (S1). Host H then refers to Payment Status Data Storage Area H51b1 (Fig. 1156) (S2). If the payment status data stored therein is '1' (S3), Host H activates 2nd Authentication Processing Software H51c5 (Fig. 1160) of which the sequence is described in Fig. 1174 (S4).

[3617] Fig. 1174 illustrates 2nd Authentication Processing Software H51c5 stored in Membership Administrating Software Storage Area H51c (Fig. 1160) of Host H (Fig. 429), which identifies the functions available to the specific Communication Device 200. Referring to the present drawing, Host H retrieves the user ID from Authentication Request Storage Area H51b5 (Fig. 1155) (S1). Host H then identifies the user's service type data by referring to Users' Service Type Data Storage Area H51b4 (Fig. 1159) (S2). Host H further identifies the available service type data by referring to Service Type Data Storage Area H51b3 (Fig. 1158) (S3). The function ID is retrieved from Authentication Request Storage Area H51b5 (Fig. 1155) (S4), and if the function identified by the function ID is the one which is available (S5), Host H proceeds with implementing the function (S6).

[3618] Fig. 1175 illustrates Payment Status Updating Software

H51c7 stored in Membership Administrating Software Storage Area H51c (Fig. 1160) of Host H (Fig. 429), which updates the payment status of the user of Communication Device 200. Referring to the present drawing, Host H checks the payment status (S1). If the monthly fee is paid (S2), Host H registers the payment status data as '1' (S3a) and registers the payment status data as '0' (S3b) if the monthly fee is not paid. This sequence is executed for all user IDs stored in Payment Status Data Storage Area H51b1 (Fig. 1156) periodically, such as on the first day of each month or on the last day of each month.

[3619] Fig. 1176 illustrates another embodiment of Payment Status Updating Software H51c7 stored in Membership Administrating Software Storage Area H51c (Fig. 1160) of Host H (Fig. 429), which updates the payment status of the user of Communication Device 200. Referring to the present drawing, Host H checks the payment status (S1). If the monthly fee is paid (S2), Host H registers the payment status data as '1' (S4a). Even though the monthly fee is not paid (S2), if the grace period has not yet passed (S3), Host H registers the payment status data as '1' (S4a). If the monthly fee is not yet paid (S2) and the grace period has passed (S3), Host H registers the payment status data as

'0' (S4b). This sequence is executed for all user IDs stored in Payment Status Data Storage Area H51b1 (Fig. 1156) periodically, such as on the first day of each month or on the last day of each month..

[3620] *<<Membership Administrating Function -- Another Embodiment01>>*

[3621] Figs. 1177 through 1181 illustrate another embodiment of the present function wherein the authentication process is rendered only by referring to the user ID.

[3622] Fig. 1177 illustrates Function Selecting Software 20651c1 stored in Membership Administrating Software Storage Area 20651c (Fig. 1168) of Communication Device 200, which enables the user of Communication Device 200 to select function(s) from a function list displayed on LCD 201 (Fig. 1). Referring to the present drawing, CPU 211 (Fig. 1) retrieves the available function data from Available Function Data Storage Area 20651b5 (Fig. 1167), and creates a function list therefrom (S1). The fuction list is displayed on LCD 201 (S2), and one or more functions to be implemented are selected from the list by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S3).

[3623] Fig. 1178 illustrates Authentication Request Sending Software 20651c2 stored in Membership Administrating Soft-

ware Storage Area 20651c (Fig. 1168) of Communication Device 200, which sends to Host H (Fig. 429) an authentication request. Referring to the present drawing, CPU 211 (Fig. 1) sends Authentication Request 51AR To Host H (S1).

[3624] Fig. 1179 illustrates the data included in Authentication Request 51AR described in Fig. 1178. As described in the present drawing, Authentication Request 51AR includes the user ID. Here, the user ID is the one retrieved from column 'User ID' of Payment Status Data Storage Area 20651b1 (Fig. 1164), i.e., 'User #1'.

[3625] Fig. 1180 illustrates Authentication Request Receiving Software H51c3 stored in Membership Administrating Software Storage Area H51c (Fig. 1160) of Host H (Fig. 429), which receives Authentication Request 51AR (Fig. 1179) sent from Communication Device 200. Referring to the present drawing, Host H receives Authentication Request 51AR (Fig. 1179) (S1), which is stored in Authentication Request Storage Area H51b5 (Fig. 1155) (S2).

[3626] Fig. 1181 illustrates 1st Authentication Processing Software H51c4 stored in Membership Administrating Software Storage Area H51c (Fig. 1160) of Host H (Fig. 429), which identifies the payment status of the user of Com-

munication Device 200. Referring to the present drawing, Host H retrieves the user ID from Authentication Request Storage Area H51b5 (Fig. 1155) (S1). Host H then refers to Payment Status Data Storage Area H51b1 (Fig. 1156) (S2). If the payment status data stored therein is '1' (S3), Host H proceeds with implementing the function (S4).

[3627] *<<Membership Administrating Function -- Another Embodiment02>>*

[3628] Figs. 1182 through 1188 illustrate another embodiment of the present function wherein the authentication process is rendered by referring to the user ID and the password.

[3629] Fig. 1182 illustrates Function Selecting Software 20651c1 stored in Membership Administrating Software Storage Area 20651c (Fig. 1168) of Communication Device 200, which enables the user of Communication Device 200 to select function(s) from a function list displayed on LCD 201 (Fig. 1). Referring to the present drawing, CPU 211 (Fig. 1) retrieves the available function data from Available Function Data Storage Area 20651b5 (Fig. 1167), and creates a function list therefrom (S1). The fuction list is displayed on LCD 201 (S2), and one or more functions to be implemented are selected from the list by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S3).

The user ID and the password are input by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S4).

[3630] Fig. 1183 illustrates Authentication Request Sending Software 20651c2 stored in Membership Administrating Software Storage Area 20651c (Fig. 1168) of Communication Device 200, which sends to Host H (Fig. 429) an authentication request. Referring to the present drawing, CPU 211 (Fig. 1) sends Authentication Request 51AR To Host H (S1).

[3631] Fig. 1184 illustrates the data included in Authentication Request 51AR described in Fig. 1183. As described in the present drawing, Authentication Request 51AR includes the user ID, the function ID, and the password data. Here, the user ID and the password data are the ones input in S4 of Fig. 1182. The function ID is the one selected in S3 of Fig. 1182.

[3632] Fig. 1185 illustrates Authentication Request Receiving Software H51c3 stored in Membership Administrating Software Storage Area H51c (Fig. 1160) of Host H (Fig. 429), which receives Authentication Request 51AR (Fig. 1171) sent from Communication Device 200. Referring to the present drawing, Host H receives Authentication Request 51AR (Fig. 1171) (S1), which is stored in Authenti-

cation Request Storage Area H51b5 (Fig. 1155) (S2).

[3633] Fig. 1186 illustrates 1st Authentication Processing Software H51c4 stored in Membership Administrating Software Storage Area H51c (Fig. 1160) of Host H (Fig. 429), which identifies the payment status of the user of Communication Device 200. Referring to the present drawing, Host H retrieves the user ID from Authentication Request Storage Area H51b5 (Fig. 1155) (S1). Host H then refers to Payment Status Data Storage Area H51b1 (Fig. 1156) (S2). If the payment status data stored therein is '1' (S3), Host H activates 3rd Authentication Processing Software H51c6 (Fig. 1160) of which the sequence is described in Fig. 1187 (S4).

[3634] Fig. 1187 illustrates 3rd Authentication Processing Software H51c6 stored in Membership Administrating Software Storage Area H51c (Fig. 1160) of Host H (Fig. 429), which identifies the authenticity of the user ID and the password input in S4 of Fig. 1182. Referring to the present drawing, Host H retrieves the user ID from Authentication Request Storage Area H51b5 (Fig. 1155) (S1). Host H then retrieves the password data from Authentication Request Storage Area H51b5 (Fig. 1155) (S2). If the user ID and the password data described in S1 and S2 are

correct by referring to Password Data Storage Area H51b2 (Fig. 1157) (S3), Host H activates 2nd Authentication Processing Software H51c5 (Fig. 1160) of which the sequence is described in Fig. 1188 (S4). For the avoidance of doubt, 3rd Authentication Processing Software H51c6 described in the present drawing may be executed prior to the execution of 1st Authentication Processing Software H51c4 described in Fig. 1186.

[3635] Fig. 1188 illustrates 2nd Authentication Processing Software H51c5 stored in Membership Administrating Software Storage Area H51c (Fig. 1160) of Host H (Fig. 429), which identifies the functions available to the specific Communication Device 200. Referring to the present drawing, Host H retrieves the user ID from Authentication Request Storage Area H51b5 (Fig. 1155) (S1). Host H then identifies the user's service type data by referring to Users' Service Type Data Storage Area H51b4 (Fig. 1159) (S2). Host H further identifies the available service type data by referring to Service Type Data Storage Area H51b3 (Fig. 1158) (S3). The function ID is retrieved from Authentication Request Storage Area H51b5 (Fig. 1155) (S4), and if the function identified by the function ID is the one which is available (S5), Host H proceeds with implement-

ing the function (S6).

[3636] *<<Keyword Search Timer Recording Function>>*

[3637] Figs. 1189 through 1254 illustrate the keyword search timer recording function which enables to timer record TV programs which meet a certain criteria set by the user of Communication Device 200. The present function is another embodiment of the timer video recording function described in Figs. 88 through 135 (more particularly in Figs. 113 through 118 and/or Fig. 135).

[3638] Fig. 1189 illustrates the storage area included in Host H (Fig. 429). As described in the present drawing, Host H (Fig. 429) includes Keyword Search Timer Recording Information Storage Area H52a of which the data and software programs stored therein are described in Fig. 1190.

[3639] Fig. 1190 illustrates the storage areas included in Keyword Search Timer Recording Information Storage Area H52a (Fig. 1189). As described in the present drawing, Keyword Search Timer Recording Information Storage Area H52a includes Keyword Search Timer Recording Data Storage Area H52b and Keyword Search Timer Recording Software Storage Area H52c. Keyword Search Timer Recording Data Storage Area H52b stores the data necessary to implement the present function on the side of

Host H (Fig. 429), such as the ones described in Figs. 1191 through 1199. Keyword Search Timer Recording Software Storage Area H52c stores the software programs necessary to implement the present function on the side of Host H, such as the ones described in Fig. 1200.

[3640] Fig. 1191 illustrates the storage areas included in Keyword Search Timer Recording Data Storage Area H52b (Fig. 1190). As described in the present drawing, Keyword Search Timer Recording Data Storage Area H52b includes TV Program Data Storage Area H52b1, TV Program Time Frame Data Storage Area H52b2, TV Program Channel Data Storage Area H52b3, TV Program Actors/Actresses Data Storage Area H52b4, TV Program Category Data Storage Area H52b5, TV Program Summary Data Storage Area H52b6, and Timer Recording TV Program Relating Data Storage Area 20652b7. TV Program Data Storage Area H52b1 stores the data described in Fig. 1192. TV Program Time Frame Data Storage Area H52b2 stores the data described in Fig. 1193. TV Program Channel Data Storage Area H52b3 stores the data described in Fig. 1195. TV Program Actors/Actresses Data Storage Area H52b4 stores the data described in Fig. 1196. TV Program Category Data Storage Area H52b5 stores the data de-

scribed in Fig. 1197. TV Program Summary Data Storage Area H52b6 stores the data described in Fig. 1198. Timer Recording TV Program Relating Data Storage Area 20652b7 stores the data described in Fig. 1199.

[3641] Fig. 1192 illustrates the data stored in TV Program Data Storage Area H52b1 (Fig. 1190). As described in the present drawing, TV Program Data Storage Area H52b1 comprises two columns, i.e., 'TV Program ID' and 'TV Program Data'. Column 'TV Program ID' stores the TV program IDs, and each TV program ID is the identification of the corresponding TV program data stored in column 'TV Program Data'. Column 'TV Program Data' stores the TV program data, and each TV program data comprises audiovisual data representing a TV program designed to be broadcasted and/or displayed on LCD 201 (Fig. 1) of Communication Device 200. The TV program IDs and the TV program data are pre-stored in TV Program Data Storage Area H52b1. In the example described in the present drawing, TV Program Data Storage Area H52b1 stores the following data: the TV program ID 'TV Program #1' of which the corresponding TV program data is 'TV Program Data #1'; the TV program ID 'TV Program #2' of which the corresponding TV program data is 'TV Program Data #2';

the TV program ID 'TV Program #3' of which the corresponding TV program data is 'TV Program Data #3'; the TV program ID 'TV Program #4' of which the corresponding TV program data is 'TV Program Data #4'; the TV program ID 'TV Program #5' of which the corresponding TV program data is 'TV Program Data #5'; and the TV program ID 'TV Program #6' of which the corresponding TV program data is 'TV Program Data #6'. Here, the TV program data may be of any TV program, such as science fiction, situation comedy, news, and documentary.

[3642] Fig. 1193 illustrates the data stored in TV Program Time Frame Data Storage Area H52b2 (Fig. 1190). As described in the present drawing, TV Program Time Frame Data Storage Area H52b2 comprises three columns, i.e., 'TV Program ID', 'TV Program Time Frame Data #1', and 'TV Program Time Frame Data #2'. Column 'TV Program ID' stores the TV program IDs, and each TV program ID is the identification of the corresponding TV program time frame data #1 stored in column 'TV Program Time Frame Data #1'. Column 'TV Program Time Frame Data #1' stores the TV program time frame data #1, and each TV program time frame data #1 represents the starting time and the ending time of the TV program represented by the corre-

sponding TV program ID. Column 'TV Program Time Frame Data #2' stores the TV program time frame data #2, and each TV program time frame data #2 represents the starting time and the ending time of the re-run of the TV program represented by the corresponding TV program ID. In the example described in the present drawing, TV Program Time Frame Data Storage Area H52b2 stores the following data: the TV program ID 'TV Program #1' wherein the TV program time frame data #1 is '19:00 - 19:30' and the TV program time frame data #2 is '20:30 - 21:00'; the TV program ID 'TV Program #2' wherein the TV program time frame data #1 is '19:30 - 20:30' and the TV program time frame data #2 is 'Null'; the TV program ID 'TV Program #3' wherein the TV program time frame data #1 is '21:30 - 22:00' and the TV program time frame data #2 is 'Null'; the TV program ID 'TV Program #4' wherein the TV program time frame data #1 is '21:00 - 22:00' and the TV program time frame data #2 is 'Null'; the TV program ID 'TV Program #5' wherein the TV program time frame data #1 is '19:00 - 20:00' and the TV program time frame data #2 is '20:30 - 21:30'; and the TV program ID 'TV Program #6' wherein the TV program time frame data #1 is '20:00 - 20:30' and the TV program time frame data

#2 is 'Null'.

[3643] Fig. 1194 illustrates another embodiment of the data stored in TV Program Time Frame Data Storage Area H52b2 (Fig. 1193). As described in the present drawing, TV Program Time Frame Data Storage Area H52b2 comprises three columns, i.e., 'TV Program ID', 'TV Program Time Frame Data #1', and 'Re-run Flag'. Column 'TV Program ID' stores the TV program IDs, and each TV program ID is the identification of the corresponding TV program time frame data #1 stored in column 'TV Program Time Frame Data #1'. Column 'TV Program Time Frame Data #1' stores the TV program time frame data #1, and each TV program time frame data #1 represents the starting time and the ending time of the TV program represented by the corresponding TV program ID. Column 'Re-run Flag' stores the re-run flag data, and each re-run flag data represents whether the TV program represented by the corresponding TV program ID is a re-run. The re-run flag data is represented by either '1' or '0' wherein '1' indicates that the corresponding TV program is a re-run, and '0' indicates that the corresponding TV program is not a re-run. In the example described in the present drawing, the following data are stored in TV Program Time Frame Data

Storage Area H52b2: the TV program ID 'TV Program #1' wherein the TV program time frame data #1 is '19:00 - 19:30' and the re-run flag data is '0'; the TV program ID 'TV Program #2' wherein the TV program time frame data #1 is '19:30 - 20:30' and the re-run flag data is '0'; the TV program ID 'TV Program #3' wherein the TV program time frame data #1 is '21:30 - 22:00' and the re-run flag data is '0'; the TV program ID 'TV Program #4' wherein the TV program time frame data #1 is '21:00 - 22:00' and the re-run flag data is '0'; the TV program ID 'TV Program #5' wherein the TV program time frame data #1 is '19:00 - 20:00' and the re-run flag data is '0'; the TV program ID 'TV Program #6' wherein the TV program time frame data #1 is '20:00 - 20:30' and the re-run flag data is '0'; the TV program ID 'TV Program #1' wherein the TV program time frame data #1 is '20:30 - 21:00' and the re-run flag data is '1'; and the TV program ID 'TV Program #5' wherein the TV program time frame data #1 is '20:30 - 21:30' and the re-run flag data is '1'.

[3644] Fig. 1195 illustrates the data stored in TV Program Channel Data Storage Area H52b3 (Fig. 1190). As described in the present drawing, TV Program Channel Data Storage Area H52b3 comprises two columns, i.e., 'TV Program ID'

and 'TV Program Channel Data'. Column 'TV Program ID' stores the TV program IDs which are described hereinbefore. Column 'TV Program Channel Data' stores the TV program channel data, and each TV program channel data represents the channel number of the TV program of the corresponding TV program ID. In the example described in the present drawing, TV Program Channel Data Storage Area H52b3 stores the following data: the TV program ID 'TV Program #1' of which the TV program channel data is 'Ch 1'; the TV program ID 'TV Program #2' of which the TV program channel data is 'Ch 1'; the TV program ID 'TV Program #3' of which the TV program channel data is 'Ch 2'; the TV program ID 'TV Program #4' of which the TV program channel data is 'Ch 1'; the TV program ID 'TV Program #5' of which the TV program channel data is 'Ch 2'; and the TV program ID 'TV Program #6' of which the TV program channel data is 'Ch 2'.

[3645] Fig. 1196 illustrates the data stored in TV Program Actors/Actresses Data Storage Area H52b4 (Fig. 1190). As described in the present drawing, TV Program Actors/ Actresses Data Storage Area H52b4 comprises two columns, i.e., 'TV Program ID' and 'Actors/Actresses Data'. Column 'TV Program ID' stores the TV program IDs which

are described hereinbefore. Column 'Actors/Actresses Data' stores the actors/actresses data, and each actors/actresses data comprises alphanumeric data representing the names of the actors and/or the actresses who are acting in the TV program represented by the corresponding TV program ID. In the example described in the present drawing, TV Program Actors/Actresses Data Storage Area H52b4 stores the following data: the TV program ID 'TV Program #1' of which the actors/actresses data is 'Actor #1, Actress #2'; the TV program ID 'TV Program #2' of which the actors/actresses data is 'Actor #3, Actress #3, Actress #4'; the TV program ID 'TV Program #3' of which the actors/actresses data is 'Actress #5, Actress #6'; the TV program ID 'TV Program #4' of which the actors/actresses data is 'Actor #7, Actor #8'; the TV program ID 'TV Program #5' of which the actors/actresses data is 'Actress #9'; and the TV program ID 'TV Program #6' of which the actors/actresses data is 'Actor #10, Actor #11, Actress #12'. The actors/actresses data may be the name of any exisiting actor(s) and/or actress(es).

[3646] Fig. 1197 illustrates the data stored in TV Program Category Data Storage Area H52b5 (Fig. 1190). As described in the present drawing, TV Program Category Data Storage

Area H52b5 comprises two columns, i.e., 'TV Program ID' and 'Category Data'. Column 'TV Program ID' stores the TV program IDs which are described hereinbefore. Column 'Category Data' stores the category data, and each category data comprises alphanumeric data representing the category to which each TV program data of the corresponding TV program ID pertains. In the example described in the present drawing, TV Program Category Data Storage Area H52b5 stores the following data: the TV program ID 'TV Program #1' and the corresponding category data 'Science Fiction'; the TV program ID 'TV Program #2' and the corresponding category data 'Situation Comedy'; the TV program ID 'TV Program #3' and the corresponding category data 'News'; the TV program ID 'TV Program #4' and the corresponding category data 'Documentary'; the TV program ID 'TV Program #5' and the corresponding category data 'Science Fiction'; and the TV program ID 'TV Program #6' and the corresponding category data 'Situation Comedy'.

[3647] Fig. 1198 illustrates the data stored in TV Program Summary Data Storage Area H52b6 (Fig. 1190). As described in the present drawing, TV Program Summary Data Storage Area H52b6 comprises two columns, i.e., 'TV Program

ID' and 'Summary Data'. Column 'TV Program ID' stores the TV program IDs which are described hereinbefore. Column 'Summary Data' stores the summary data, and each summary data comprises alphanumeric data representing the summary of the TV program of the corresponding TV program ID. In the example described in the present drawing, TV Program Summary Data Storage Area H52b6 stores the following data: the TV program ID 'TV Program #1' and the corresponding summary data 'Summary #1'; the TV program ID 'TV Program #2' and the corresponding summary data 'Summary #2'; the TV program ID 'TV Program #3' and the corresponding summary data 'Summary #3'; the TV program ID 'TV Program #4' and the corresponding summary data 'Summary #4'; the TV program ID 'TV Program #5' and the corresponding summary data 'Summary #5'; and the TV program ID 'TV Program #6' and the corresponding summary data 'Summary #6'.

[3648] Fig. 1199 illustrates the data stored in Timer Recording TV Program Relating Data Storage Area H52b7 (Fig. 1190). As described in the present drawing, Timer Recording TV Program Relating Data Storage Area H52b7 stores the timer recording TV program relating data of each user. The timer recording TV program relating data comprises

five columns, i.e., 'TV Program ID', 'TV Program Channel Data', 'TV Program Time Frame Data #1', 'Record Completed Flag Data', and 'TV Program Data'. Column 'TV Program ID' stores the TV program IDs which are described hereinbefore. Column 'TV Program Channel Data' stores the TV program channel data, and each TV program channel data represents the channel number of the TV program of the corresponding TV program ID. Column 'TV Program Time Frame Data #1' stores the TV program time frame data #1, and each TV program time frame data #1 represents the starting time and the ending time of the TV program represented by the corresponding TV program ID. Column 'Record Completed Flag Data' stores the record completed flag data, and each record completed flag data comprises either '1' or '0' wherein '1' indicates that the TV program data of the corresponding TV program ID is recorded and stored in column 'TV Program Data', and '0' indicates that the TV program data of the corresponding TV program ID is not recorded and stored in column 'TV Program Data'. Column 'TV Program Data' stores the TV program data, and each TV program data comprises audiovisual data representing a TV program designed to be broadcasted and/or displayed on LCD 201

(Fig. 1) of Communication Device 200.

[3649] Fig. 1200 illustrates the software programs stored in Keyword Search Timer Recording Software Storage Area H52c (Fig. 1190). As described in the present drawing, Keyword Search Timer Recording Software Storage Area H52c stores Keyword Search Timer Recording Data Sending Software H52c2 and Timer Recording Software H52c7. Keyword Search Timer Recording Data Sending Software H52c2 is the software program described in Fig. 1214. Timer Recording Software H52c7 is the software program described in Figs. 1220a and 1220b.

[3650] Fig. 1201 illustrates the storage area included in RAM 206 (Fig. 1) of Communication Device 200. As described in the present drawing, RAM 206 includes Keyword Search Timer Recording Information Storage Area 20652a of which the data and software programs stored therein are described in Fig. 1202.

[3651] Fig. 1202 illustrates the storage areas included in Keyword Search Timer Recording Information Storage Area 20652a (Fig. 1201). As described in the present drawing, Keyword Search Timer Recording Information Storage Area 20652a includes Keyword Search Timer Recording Data Storage Area 20652b and Keyword Search Timer Record-

ing Software Storage Area 20652c. Keyword Search Timer Recording Data Storage Area 20652b stores the data necessary to implement the present function on the side of Communication Device 200, such as the ones described in Figs. 1203 through 1211. Keyword Search Timer Recording Software Storage Area 20652c stores the software programs necessary to implement the present function on the side of Communication Device 200, such as the ones described in Fig. 1212.

[3652] The software programs stored in Keyword Search Timer Recording Software Storage Area 20652c (Fig. 1202) are downloaded from Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[3653] Fig. 1203 illustrates the storage areas included in Keyword Search Timer Recording Data Storage Area 20652b (Fig. 1202). As described in the present drawing, Keyword Search Timer Recording Data Storage Area 20652b includes TV Program Time Frame Data Storage Area 20652b2, TV Program Channel Data Storage Area 20652b3, TV Program Actors/Actresses Data Storage Area 20652b4, TV Program Category Data Storage Area 20652b5, TV Program Summary Data Storage Area 20652b6, and Timer Recording TV Program Relating Data

Storage Area 20652b7. TV Program Time Frame Data Storage Area 20652b2 stores the data described in Fig. 1204. TV Program Channel Data Storage Area 20652b3 stores the data described in Fig. 1206. TV Program Actors/Actresses Data Storage Area 20652b4 stores the data described in Fig. 1208. TV Program Category Data Storage Area 20652b5 stores the data described in Fig. 1209. TV Program Summary Data Storage Area 20652b6 stores the data described in Fig. 1210. Timer Recording TV Program Relating Data Storage Area 20652b7 stores the data described in Fig. 1211.

[3654] Fig. 1204 illustrates the data stored in TV Program Time Frame Data Storage Area 20652b2 (Fig. 1202). As described in the present drawing, TV Program Time Frame Data Storage Area 20652b2 comprises three columns, i.e., 'TV Program ID', 'TV Program Time Frame Data #1', and 'TV Program Time Frame Data #2'. Column 'TV Program ID' stores the TV program IDs, and each TV program ID is the identification of the corresponding TV program time frame data #1 stored in column 'TV Program Time Frame Data #1'. Column 'TV Program Time Frame Data #1' stores the TV program time frame data #1, and each TV program time frame data #1 represents the starting time and the

ending time of the TV program represented by the corresponding TV program ID. Column 'TV Program Time Frame Data #2' stores the TV program time frame data #2, and each TV program time frame data #2 represents the starting time and the ending time of the re-run of the TV program represented by the corresponding TV program ID. In the example described in the present drawing, TV Program Time Frame Data Storage Area 20652b2 stores the following data: the TV program ID 'TV Program #1' wherein the TV program time frame data #1 is '19:00 - 19:30' and the TV program time frame data #2 is '20:30 - 21:00'; the TV program ID 'TV Program #2' wherein the TV program time frame data #1 is '19:30 - 20:30' and the TV program time frame data #2 is 'Null'; the TV program ID 'TV Program #3' wherein the TV program time frame data #1 is '21:30 - 22:00' and the TV program time frame data #2 is 'Null'; the TV program ID 'TV Program #4' wherein the TV program time frame data #1 is '21:00 - 22:00' and the TV program time frame data #2 is 'Null'; the TV program ID 'TV Program #5' wherein the TV program time frame data #1 is '19:00 - 20:00' and the TV program time frame data #2 is '20:30 - 21:30'; and the TV program ID 'TV Program #6' wherein the TV program time frame data

#1 is '20:00 - 20:30' and the TV program time frame data #2 is 'Null'.

[3655] Fig. 1205 illustrates another embodiment of the data stored in TV Program Time Frame Data Storage Area 20652b2 (Fig. 1204). As described in the present drawing, TV Program Time Frame Data Storage Area 20652b2 comprises three columns, i.e., 'TV Program ID', 'TV Program Time Frame Data #1', and 'Re-run Flag'. Column 'TV Program ID' stores the TV program IDs, and each TV program ID is the identification of the corresponding TV program time frame data #1 stored in column 'TV Program Time Frame Data #1'. Column 'TV Program Time Frame Data #1' stores the TV program time frame data #1, and each TV program time frame data #1 represents the starting time and the ending time of the TV program represented by the corresponding TV program ID. Column 'Re-run Flag' stores the re-run flag data, and each re-run flag data represents whether the TV program represented by the corresponding TV program ID is a re-run. The re-run flag data is represented by either '1' or '0' wherein '1' indicates that the corresponding TV program is a re-run, and '0' indicates that the corresponding TV program is not a re-run. In the example described in the present drawing, the

following data are stored in TV Program Time Frame Data Storage Area 20652b2: the TV program ID 'TV Program #1' wherein the TV program time frame data #1 is '19:00 - 19:30' and the re-run flag data is '0'; the TV program ID 'TV Program #2' wherein the TV program time frame data #1 is '19:30 - 20:30' and the re-run flag data is '0'; the TV program ID 'TV Program #3' wherein the TV program time frame data #1 is '21:30 - 22:00' and the re-run flag data is '0'; the TV program ID 'TV Program #4' wherein the TV program time frame data #1 is '21:00 - 22:00' and the re-run flag data is '0'; the TV program ID 'TV Program #5' wherein the TV program time frame data #1 is '19:00 - 20:00' and the re-run flag data is '0'; the TV program ID 'TV Program #6' wherein the TV program time frame data #1 is '20:00 - 20:30' and the re-run flag data is '0'; the TV program ID 'TV Program #1' wherein the TV program time frame data #1 is '20:30 - 21:00' and the re-run flag data is '1'; and the TV program ID 'TV Program #5' wherein the TV program time frame data #1 is '20:30 - 21:30' and the re-run flag data is '1'.

[3656] Fig. 1206 illustrates the data stored in TV Program Channel Data Storage Area 20652b3 (Fig. 1202). As described in the present drawing, TV Program Channel Data Storage

Area 20652b3 comprises two columns, i.e., 'TV Program ID' and 'TV Program Channel Data'. Column 'TV Program ID' stores the TV program IDs which are described hereinbefore. Column 'TV Program Channel Data' stores the TV program channel data, and each TV program channel data represents the channel number of the TV program of the corresponding TV program ID. In the example described in the present drawing, TV Program Channel Data Storage Area 20652b3 stores the following data: the TV program ID 'TV Program #1' of which the TV program channel data is 'Ch 1'; the TV program ID 'TV Program #2' of which the TV program channel data is 'Ch 1'; the TV program ID 'TV Program #3' of which the TV program channel data is 'Ch 2'; the TV program ID 'TV Program #4' of which the TV program channel data is 'Ch 1'; the TV program ID 'TV Program #5' of which the TV program channel data is 'Ch 2'; and the TV program ID 'TV Program #6' of which the TV program channel data is 'Ch 2'.

[3657] Fig. 1207 illustrates the TV program listing displayed on LCD 201 (Fig. 1). As described in the present drawing, the TV program listing reflects the data stored in TV Program Time Frame Data Storage Area 20652b2 (Figs. 1204 and/or 1205) and TV Program Channel Data Storage Area

20652b3 (Fig. 1206).

[3658] Fig. 1208 illustrates the data stored in TV Program Actors/Actresses Data Storage Area 20652b4 (Fig. 1202). As described in the present drawing, TV Program Actors/Actresses Data Storage Area 20652b4 comprises two columns, i.e., 'TV Program ID' and 'Actors/Actresses Data'. Column 'TV Program ID' stores the TV program IDs which are described hereinbefore. Column 'Actors/Actresses Data' stores the actors/actresses data, and each actors/actresses data comprises alphanumeric data representing the names of the actors and/or the actresses who are acting in the TV program represented by the corresponding TV program ID. In the example described in the present drawing, TV Program Actors/Actresses Data Storage Area 20652b4 stores the following data: the TV program ID 'TV Program #1' of which the actors/actresses data is 'Actor #1, Actress #2'; the TV program ID 'TV Program #2' of which the actors/actresses data is 'Actor #3, Actress #3, Actress #4'; the TV program ID 'TV Program #3' of which the actors/actresses data is 'Actress #5, Actress #6'; the TV program ID 'TV Program #4' of which the actors/actresses data is 'Actor #7, Actor #8'; the TV program ID 'TV Program #5' of which the actors/actresses data is 'Actress

#9'; and the TV program ID 'TV Program #6' of which the actors/actresses data is 'Actor #10, Actor #11, Actress #12'. The actors/actresses data may be the name of any exisiting actor(s) and/or actress(es).

[3659] Fig. 1209 illustrates the data stored in TV Program Category Data Storage Area 20652b5 (Fig. 1202). As described in the present drawing, TV Program Category Data Storage Area 20652b5 comprises two columns, i.e., 'TV Program ID' and 'Category Data'. Column 'TV Program ID' stores the TV program IDs which are described hereinbefore. Column 'Category Data' stores the category data, and each category data comprises alphanumeric data representing the category to which each TV program data of the corresponding TV program ID pertains. In the example described in the present drawing, TV Program Category Data Storage Area 20652b5 stores the following data: the TV program ID 'TV Program #1' and the corresponding category data 'Science Fiction'; the TV program ID 'TV Program #2' and the corresponding category data 'Situation Comedy'; the TV program ID 'TV Program #3' and the corresponding category data 'News'; the TV program ID 'TV Program #4' and the corresponding category data 'Documentary'; the TV program ID 'TV Program #5' and the cor-

responding category data 'Science Fiction'; and the TV program ID 'TV Program #6' and the corresponding category data 'Situation Comedy'.

[3660] Fig. 1210 illustrates the data stored in TV Program Summary Data Storage Area 20652b6 (Fig. 1202). As described in the present drawing, TV Program Summary Data Storage Area 20652b6 comprises two columns, i.e., 'TV Program ID' and 'Summary Data'. Column 'TV Program ID' stores the TV program IDs which are described hereinbefore. Column 'Summary Data' stores the summary data, and each summary data comprises alphanumeric data representing the summary of the TV program of the corresponding TV program ID. In the example described in the present drawing, TV Program Summary Data Storage Area 20652b6 stores the following data: the TV program ID 'TV Program #1' and the corresponding summary data 'Summary #1'; the TV program ID 'TV Program #2' and the corresponding summary data 'Summary #2'; the TV program ID 'TV Program #3' and the corresponding summary data 'Summary #3'; the TV program ID 'TV Program #4' and the corresponding summary data 'Summary #4'; the TV program ID 'TV Program #5' and the corresponding summary data 'Summary #5'; and the TV program ID 'TV

Program #6' and the corresponding summary data 'Summary #6'.

[3661] Fig. 1211 illustrates the data stored in Timer Recording TV Program Relating Data Storage Area 20652b7 (Fig. 1202). As described in the present drawing, Timer Recording TV Program Relating Data Storage Area 20652b7 stores the timer recording TV program relating data. The timer recording TV program relating data comprises five columns, i.e., 'TV Program ID', 'TV Program Channel Data', 'TV Program Time Frame Data #1', 'Record Completed Flag Data', and 'TV Program Data'. Column 'TV Program ID' stores the TV program IDs which are described hereinbefore. Column 'TV Program Channel Data' stores the TV program channel data, and each TV program channel data represents the channel number of the TV program of the corresponding TV program ID. Column 'TV Program Time Frame Data #1' stores the TV program time frame data #1, and each TV program time frame data #1 represents the starting time and the ending time of the TV program represented by the corresponding TV program ID. Column 'Record Completed Flag Data' stores the record completed flag data, and each record completed flag data comprises either '1' or '0' wherein '1' indicates

that the TV program data of the corresponding TV program ID is recorded and stored in column 'TV Program Data', and '0' indicates that the TV program data of the corresponding TV program ID is not recorded and stored in column 'TV Program Data'. Column 'TV Program Data' stores the TV program data, and each TV program data comprises audiovisual data representing a TV program designed to be broadcasted and/or displayed on LCD 201 (Fig. 1) of Communication Device 200. A plurality of timer recording TV program relating data can be stored in Timer Recording TV Program Relating Data Storage Area 20652b7.

[3662] Fig. 1212 illustrates the software programs stored in Keyword Search Timer Recording Software Storage Area 20652c (Fig. 1202). As described in the present drawing, Keyword Search Timer Recording Software Storage Area 20652c stores Keyword Search Timer Recording Data Request Sending Software 20652c1, Keyword Search Timer Recording Data Receiving Software 20652c3, Timer Recording Setting By Actors/Actresses Software 20652c4, Timer Recording Setting By Category Software 20652c5, Re-run Avoiding Process Software 20652c6, Timer Recording Software 20652c7, Timer Recording Notifica-

tion Displaying Software 20652c8, TV Program Data Selecting Software 20652c10, and TV Program Data Replaying Software 20652c11. Keyword Search Timer Recording Data Request Sending Software 20652c1 is the software program described in Fig. 1213. Keyword Search Timer Recording Data Receiving Software 20652c3 is the software program described in Fig. 1215. Timer Recording Setting By Actors/Actresses Software 20652c4 is the software program described in Fig. 1216. Timer Recording Setting By Category Software 20652c5 is the software program described in Fig. 1217. Re-run Avoiding Process Software 20652c6 is the software program described in Fig. 1218. Timer Recording Software 20652c7 is the software program described in Figs. 1220a and 1220b. Timer Recording Notification Displaying Software 20652c8 is the software program described in Fig. 1221. TV Program Data Selecting Software 20652c10 is the software program described in Fig. 1221a. TV Program Data Replaying Software 20652c11 is the software program described in Fig. 1221b.

[3663] Fig. 1213 illustrates Keyword Search Timer Recording Data Request Sending Software 20652c1 stored in Keyword Search Timer Recording Software Storage Area

20652c (Fig. 1212) of Communication Device 200, which sends the keyword search timer recording data request to Host H (Fig. 429). Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends the keyword search timer recording data request to Host H (S1). Here, the keyword search timer recording data request is a request singal which requests to send back the keyword search timer recording data stored in Keyword Search Timer Recording Data Storage Area H52b (Fig. 1191) of Host H.

[3664] Fig. 1214 illustrates Keyword Search Timer Recording Data Sending Software H52c2 stored in Keyword Search Timer Recording Software Storage Area H52c (Fig. 1200) of Host H (Fig. 429), which sends the keyword search timer recording data to Communication Device 200. Referring to the present drawing, Host H, upon receiving the keyword search timer recording data request from Communication Device 200 (S1), retrieves the keyword search timer recording data from Keyword Search Timer Recording Data Storage Area H52b (Fig. 1191), excluding the data stored in TV Program Data Storage Area H52b1 (Fig. 1192). The data stored in Timer Recording TV Program Relating Data Storage Area H52b7 (Fig. 1199) are also re-

trieved, however, only of the ones of the corresponding user ID.

[3665] Fig. 1215 illustrates Keyword Search Timer Recording Data Receiving Software 20652c3 stored in Keyword Search Timer Recording Software Storage Area 20652c (Fig. 1212) of Communication Device 200, which receives and stores the keyword search timer recording data sent from Host H (Fig. 429). Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 receives the keyword search timer recording data from Host H (S1). CPU 211 then stores the data in Keyword Search Timer Recording Data Storage Area 20652b (Fig. 1203) (S2).

[3666] Fig. 1216 illustrates Timer Recording Setting By Actors/Actresses Software 20652c4 stored in Keyword Search Timer Recording Software Storage Area 20652c (Fig. 1212) of Communication Device 200, which sets the timer recording by inputting the names of actors and/or actresses. Referring to the present drawing, the actors/actresses' name input area in which the names of actors and/or actresses are to be input is displayed on LCD 201 (Fig. 1) (S1). The names of actors and/or actresses are input to the area by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2). CPU 211 searches TV Pro-

gram Actors/Actresses Data Storage Area 20652b4 (Fig. 1208) (S3), and identifies the TV program IDs of the TV programs having the actors and/or actresses identified in S2 acting therein, as well as implementing the re-run avoiding process (S4). The re-run avoiding process is the process described in Figs. 1218 and 1219. CPU 211 identifies the corresponding TV program channel data and the TV program time frame data #1 of each TV program ID by referring to TV Program Channel Data Storage Area 20652b3 (Fig. 1206) and TV Program Time Frame Data Storage Area 20652b2 (Figs. 1204 and/or 1205), and stores the TV program IDs, the TV program channel data, and the TV program time frame data #1 (collectively referred to as the 'timer recording setting data' hereinafter) in Timer Recording TV Program Relating Data Storage Area 20652b7 (Fig. 1211) (S5). The timer recording setting data is displayed on LCD 201 (S6).

[3667] Fig. 1217 illustrates Timer Recording Setting By Category Software 20652c5 stored in Keyword Search Timer Recording Software Storage Area 20652c (Fig. 1212) of Communication Device 200, which sets the timer recording by inputting the names of the categories. Referring to the present drawing, the category input area in which the

names of the categories are to be input is displayed on LCD 201 (Fig. 1) (S1). The names of the categories are input to the area by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2). CPU 211 searches TV Program Category Data Storage Area 20652b5 (Fig. 1209) (S3), and identifies the TV program IDs of the TV programs pertaining to the categories identified in S2, as well as implementing the re-run avoiding process (S4). The re-run avoiding process is the process described in Figs. 1218 and 1219. CPU 211 identifies the corresponding TV program channel data and the TV program time frame data #1 of each TV program ID by referring to TV Program Channel Data Storage Area 20652b3 (Fig. 1206) and TV Program Time Frame Data Storage Area 20652b2 (Figs. 1204 and/or 1205), and stores the TV program IDs, the TV program channel data, and the TV program time frame data #1 (i.e., timer recording setting data) in Timer Recording TV Program Relating Data Storage Area 20652b7 (Fig. 1211) (S5). The timer recording setting data is displayed on LCD 201 (S6).

[3668] Fig. 1218 illustrates Re-run Avoiding Process Software 20652c6 stored in Keyword Search Timer Recording Software Storage Area 20652c (Fig. 1212) of Communication

Device 200, which avoids selecting the re-runs of the TV programs which are already selected. Referring to the present drawing, CPU 211 (Fig. 1) searches column 'TV Program Time Frame Data #1' of TV Program Time Frame Data Storage Area 20652b2 described in Fig. 1204 (S1). The re-runs are avoided from being selected by prohiting to search column 'TV Program Time Frame Data #2'.

[3669] Fig. 1219 illustrates another embodiment of Re-run Avoiding Process Software 20652c6 stored in Keyword Search Timer Recording Software Storage Area 20652c (Fig. 1212) of Communication Device 200, which avoids selecting the re-runs of the TV programs which are already selected. Referring to the present drawing, CPU 211 (Fig. 1) searches column 'Re-run Flag Data' of TV Program Time Frame Data Storage Area 20652b2 described in Fig. 1205 (S1). If the re-run flag data is '1' (S2), CPU 211 prohibits the corresponding TV program data to be timer recorded (S3). In the example described in Fig. 1205, the TV programs #1 and #5 of which the TV program time frame data #1 are '20:30 - 21:00' and '20:30 - 21:30' respectively, are re-runs (i.e., the re-run flag data are registered as '1'). Therefore, the TV program data of which the TV program IDs are TV programs #1 and #5 on-aired on

20:30 - 21:00 and 20:30 - 21:30 respectively are refrained from being timer recorded.

[3670] Figs. 1220a and 1220b illustrate Timer Recording Software H52c7 stored in Keyword Search Timer Recording Software Storage Area H52c (Fig. 1200) of Host H (Fig. 429) and Timer Recording Software 20652c7 stored in Keyword Search Timer Recording Software Storage Area 20652c (Fig. 1212) of Communication Device 200, which implement the timer recording in accordance to the settings described in Figs. 1216 and/or 1217. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the TV program time frame data from Timer Recording TV Program Relating Data Storage Area 20652b7 (Fig. 1211) (S1). If the time frame data matches with the current time (S2), CPU 211 sends the corresponding TV program data downloading request to Host H (S3). Upon receiving the corresponding TV program data downloading request from Communication Device 200 (S4), Host H retrieves the corresponding TV program data from TV Program Data Storage Area H52b1 (Fig. 1192) (S5), and sends the data to Communication Device 200 (S6). CPU 211 receives the corresponding TV program data from Host H (S7), and stores the corresponding TV

program data in Timer Recording TV Program Relating Data Storage Area 20652b7 (Fig. 1211) (S8). CPU 211 then registers the corresponding record completed flag data (of Timer Recording TV Program Relating Data Storage Area 20652b7 (Fig. 1211)) as '1' (S9).

[3671] Fig. 1221 illustrates Timer Recording Notification Displaying Software 20652c8 stored in Keyword Search Timer Recording Software Storage Area 20652c (Fig. 1212) of Communication Device 200, which displays a notification on LCD 201 (Fig. 1) when a new TV program data is recorded. Referring to the present drawing, CPU 211 of Communication Device 200 periodically checks the status of TV Timer Recording TV Program Relating Data Storage Area 20652b7 (Fig. 1211) (S1). If a new TV program data stored (S2), CPU 211 displays the timer recording notification on LCD 201 (Fig. 1) which indicates that a new TV program data is recorded (S3).

[3672] Fig. 1221a illustrates TV Program Data Selecting Software 20652c10 stored in Keyword Search Timer Recording Software Storage Area 20652c (Fig. 1212) of Communication Device 200, which selects the TV program data to be replayed. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the timer

recording TV program relating data from Timer Recording TV Program Relating Data Storage Area 20652b7 (Fig. 1211) (S1), and displays a list of the timer recording TV program relating data on LCD 201 (Fig. 1) (S2). The TV program data to be replayed is selected therefrom by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S3).

[3673] Fig. 1221b illustrates TV Program Data Replaying Software 20652c11 stored in Keyword Search Timer Recording Software Storage Area 20652c (Fig. 1212) of Communication Device 200, which replays the TV program data selected in S3 of Fig. 1221a. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 replayes the TV program data (S1), and outputs visual data and audio data from LCD 201 (Fig. 1) and Speaker 216 (Fig. 1), respectively (S2). Here, the entire TV program data may be downloaded before being replayed or, as another embodiment, the replay process described in S5 may be initiated as soon as a replayable portion of the TV program data is downloaded. The portion of the TV program data which is replayed may be stored for the next replay, or as another embodiment, be erased from Communication Device 200.

[3674] *<<Keyword Search Timer Recording Function -- Another Embodiment01>>*

[3675] Figs. 1222 through 1233 illustrate another embodiment of the present function wherein the timer recording setting is implemented by Communication Device 200 whereas the timer recording is implemented by Host H (Fig. 429).

[3676] Fig. 1222 illustrates the software programs stored in Keyword Search Timer Recording Software Storage Area H52c (Fig. 1190) of Host H (Fig. 429). As described in the present drawing, Keyword Search Timer Recording Software Storage Area H52c stores Timer Recording Setting By Actors/Actresses Software H52c4, Timer Recording Setting By Category Software H52c5, Re-run Avoiding Process Software H52b6, Timer Recording Software H52c7, Timer Recording Notification Displaying Software H52c8, Timer Recording TV Program Relating Data Request Sending Software H52c9, and TV Program Data Replaying Software H52c11. Timer Recording Setting By Actors/Actresses Software H52c4 is the software program described in Figs. 1224a and 1224b. Timer Recording Setting By Category Software H52c5 is the software program described in Figs. 1225a and 1225b. Re-run Avoiding Pro-

cess Software H52b6 is the software program described in Figs. 1226 and 1227. Timer Recording Software H52c7 is the software program described in Figs. 1228 and 1229. Timer Recording Notification Displaying Software H52c8 is the software program described in Fig. 1230. Timer Recording TV Program Relating Data Request Sending Software H52c9 is the software program described in Fig. 1231. TV Program Data Replaying Software H52c11 is the software program described in Fig. 1233.

[3677] Fig. 1223 illustrates the software programs stored in Keyword Search Timer Recording Software Storage Area 20652c (Fig. 1202) of Communication Device 200. As described in the present drawing, Keyword Search Timer Recording Software Storage Area 20652c stores Timer Recording Setting By Actors/Actresses Software 20652c4, Timer Recording Setting By Category Software 20652c5, Timer Recording Software 20652c7, Timer Recording Notification Displaying Software 20652c8, Timer Recording TV Program Relating Data Request Sending Software 20652c9, TV Program Data Selecting Software 20652c10, and TV Program Data Replaying Software 20652c11. Timer Recording Setting By Actors/Actresses Software 20652c4 is the software program described in Figs. 1224a

and 1224b. Timer Recording Setting By Category Software 20652c5 is the software program described in Fig. 1225a and 1225b. Timer Recording Software 20652c7 is the software program described in Figs. 1229a and 1229b. Timer Recording Notification Displaying Software 20652c8 is the software program described in Fig. 1230. Timer Recording TV Program Relating Data Request Sending Software 20652c9 is the software program described in Fig. 1231. TV Program Data Selecting Software 20652c10 is the software program described in Fig. 1232. TV Program Data Replaying Software 20652c11 is the software program described in Fig. 1233.

[3678] Figs. 1224a and 1224b illustrate Timer Recording Setting By Actors/Actresses Software H52c4 stored in Keyword Search Timer Recording Software Storage Area H52c (Fig. 1222) of Host H (Fig. 429) and Timer Recording Setting By Actors/Actresses Software 20652c4 stored in Keyword Search Timer Recording Software Storage Area 20652c (Fig. 1223) of Communication Device 200, which set the timer recording by inputting the names of actors and/or actresses. Referring to the present drawing, the actors/ actresses' name input area in which the names of actors and/or actresses are to be input is displayed on LCD 201

(Fig. 1) (S1). The names of actors and/or actresses are input to the area by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2). CPU 211 (Fig. 1) of Communication Device 200 sends the actors' and/or actresses' name data (S3), which is received by Host H (S4). Here, the actors' and/or actresses' name data is the alphanumeric data which represents the actors' and/or actresses' name input in S2. Host H searches TV Program Actors/Actresses Data Storage Area H52b4 (Fig. 1196) (S5), and identifies the TV program IDs of the TV programs having the actors and/or actresses identified in S2 acting therein, as well as implementing the re-run avoiding process (S6). The re-run avoiding process is the process described in Figs. 1226 and 1227. Host H identifies the corresponding TV program channel data and the TV program time frame data #1 of each TV program ID by referring to TV Program Channel Data Storage Area H52b3 (Fig. 1195) and TV Program Time Frame Data Storage Area H52b2 (Figs. 1193 and/or 1194), and stores the TV program IDs, the TV program channel data, and the TV program time frame data #1 (i.e., the timer recording setting data) in Timer Recording TV Program Relating Data Storage Area H52b7 (Fig. 1199) (S7). Host H then retrieves the foregoing data from

Timer Recording TV Program Relating Data Storage Area H52b7 (Fig. 1199) (S8), which are sent to Communication Device 200 (S9). Communication Device 200 receives the data (S10), and stores them in Timer Recording TV Program Relating Data Storage Area 20652b7 (Fig. 1211) (S11). The data is displayed on LCD 201 (S12).

[3679] Figs. 1225a and 1225b illustrate Timer Recording Setting By Category Software H52c5 stored in Keyword Search Timer Recording Software Storage Area H52c (Fig. 1222) of Host H (Fig. 429) and Timer Recording Setting By Category Software 20652c5 stored in Keyword Search Timer Recording Software Storage Area 20652c (Fig. 1223) of Communication Device 200, which set the timer recording by inputting the names of the categories. Referring to the present drawing, the category input area in which the names of the categories are to be input is displayed on LCD 201 (Fig. 1) (S1). The names of the categories are input to the area by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2). CPU 211 (Fig. 1) sends the category data to Host H (S3). Here, the category data is the alphanumeric data which represents the category input in S2. Host H receives the category data from Communication Device 200 (S4), and searches TV Program

Category Data Storage Area H52b5 (Fig. 1197) (S5). Host H then identifies the TV program IDs of the TV programs pertaining to the categories identified in S2, as well as implementing the re-run avoiding process (S6). The re-run avoiding process is the process described in Figs. 1226 and 1227. Host H identifies the corresponding TV program channel data and the TV program time frame data #1 of each TV program ID by referring to TV Program Channel Data Storage Area H52b3 (Fig. 1195) and TV Program Time Frame Data Storage Area H52b2 (Figs. 1193 and/or 1194), and stores the TV program IDs, the TV program channel data, and the TV program time frame data #1 (i.e., the timer recording setting data) in Timer Recording TV Program Relating Data Storage Area H52b7 (Fig. 1199) (S7). Host H retrieves the data from Timer Recording TV Program Relating Data Storage Area H52b7 (Fig. 1199) (S8), and sends them to Communication Device 200 (S9). CPU 211 receives the data (S10), and stores them in Timer Recording TV Program Relating Data Storage Area 20652b7 (Fig. 1211) (S11). The data are displayed on LCD 201 (S12).

[3680] Fig. 1226 illustrates Re-run Avoiding Process Software H52b6 stored in Keyword Search Timer Recording Soft-

ware Storage Area H52c (Fig. 1222) of Host H (Fig. 429), which avoids selecting the re-runs of the TV programs which are already selected. Referring to the present drawing, Host H searches column 'TV Program Time Frame Data #1' of TV Program Time Frame Data Storage Area H52b2 described in Fig. 1193 (S1). The re-runs are avoided from being selected by prohiting to search column 'TV Program Time Frame Data #2'.

[3681] Fig. 1227 illustrates another embodiment of Re-run Avoiding Process Software H52b6 stored in Keyword Search Timer Recording Software Storage Area H52c (Fig. 1222) of Host H (Fig. 429), which avoids selecting the re-runs of the TV programs which are already selected. Referring to the present drawing, Host H searches column 'Re-run Flag Data' of TV Program Time Frame Data Storage Area H52b2 described in Fig. 1194 (S1). If the re-run flag data is '1' (S2), Host H prohibits the corresponding TV program data to be timer recorded (S3). In the example described in Fig. 1194, the TV programs #1 and #5 of which the TV program time frame data #1 are '20:30 - 21:00' and '20:30 - 21:30' respectively, are re-runs (i.e., the re-run flag data are registered as '1'). Therefore, the TV program data of which the TV program IDs are TV pro-

grams #1 and #5 on-aired on 20:30 - 21:00 and 20:30 - 21:30 respectively are refrained from being timer recorded.

[3682] Fig. 1228 illustrates Timer Recording Software H52c7 stored in Keyword Search Timer Recording Software Storage Area H52c (Fig. 1222) of Host H (Fig. 429), which implements the timer recording in accordance to the settings described in Figs. 1224 and/or 1225. Referring to the present drawing, Host H retrieves the TV program time frame data from Timer Recording TV Program Relating Data Storage Area H52b7 (Fig. 1199) (S1). If the time frame data matches with the current time (S2), Host H stores the corresponding TV program data in Timer Recording TV Program Relating Data Storage Area H52b7 (Fig. 1199) (S3). Host H then registers the corresponding record completed flag data (of Timer Recording TV Program Relating Data Storage Area H52b7 (Fig. 1199)) as '1' (S4).

[3683] Figs. 1229a and 1229b illustrate another embodiment of Timer Recording Software H52c7 stored in Keyword Search Timer Recording Software Storage Area H52c (Fig. 1222) of Host H (Fig. 429) and Timer Recording Software 20652c7 stored in Keyword Search Timer Recording Soft-

ware Storage Area 20652c (Fig. 1223) of Communication Device 200, which automatically download the TV program data to Timer Recording TV Program Relating Data Storage Area 20652b7 (Fig. 1211) of Communication Device 200 instead of storing the data in Host H as described in Fig. 1228. Referring to the present drawing, Host H retrieves the TV program time frame data from Timer Recording TV Program Relating Data Storage Area H52b7 (Fig. 1199) (S1). If the time frame data matches with the current time (S2), Host H sends the corresponding TV program data to Communication Device 200 (S3). Upon receiving the TV program data from Host H (S4), Communication Device 200 stores the TV program data in Timer Recording TV Program Relating Data Storage Area 20652b7 (Fig. 1211) (S5). Communication Device 200 registers the corresponding record completed flag data (of Timer Recording TV Program Relating Data Storage Area 20652b7 (Fig. 1211)) as '1' (S6). Host H then registers the corresponding record completed flag data (of Timer Recording TV Program Relating Data Storage Area H52b7 (Fig. 1199)) as '1' (S7).

[3684] Fig. 1230 illustrates Timer Recording Notification Displaying Software H52c8 stored in Keyword Search Timer

Recording Software Storage Area H52c (Fig. 1222) of Host H (Fig. 429) and Timer Recording Notification Displaying Software 20652c8 stored in Keyword Search Timer Recording Software Storage Area 20652c (Fig. 1223) of Communication Device 200, which display a notification on LCD 201 (Fig. 1) when a new TV program data is recorded. Referring to the present drawing, Host periodically checks the status of TV Program Data Storage Area H52b1 (Fig. 1192) (S1). If a new TV program data stored (S2), Host H sends a timer recording notification to Communication Device 200 (S3). Here, the timer recording notification is a data which indicates that a new TV program data is recorded. Upon receiving the timer recording notification from Host H (S4), CPU 211 displays the timer recording notification on LCD 201 (Fig. 1) which indicates that a new TV program data is recorded (S5).

[3685] Fig. 1231 illustrates Timer Recording TV Program Relating Data Request Sending Software H52c9 stored in Keyword Search Timer Recording Software Storage Area H52c (Fig. 1222) of Host H (Fig. 429) and Timer Recording TV Program Relating Data Request Sending Software 20652c9 stored in Keyword Search Timer Recording Software Storage Area 20652c (Fig. 1223) of Communication Device

200, which sends and receives a timer recording TV program relating data request. Referring to the present drawing, Communication Device 200 sends the timer recording TV program relating data request (S1), which is received by Host H (S2). Here the timer recording TV program relating data request is a request to Host H for the timer recording TV program relating data to be sent to Communication Device 200. In response to the request, Host H retrieves the timer recording TV program relating data from Timer Recording TV Program Relating Data Storage Area H52b7 (Fig. 1199) of the corresponding user ID (S3), and sends the data to Communication Device 200 (S4). CPU 211 receives the timer recording TV program relating data from Host H (S5), and stores the data in Timer Recording TV Program Relating Data Storage Area 20652b7 (Fig. 1211) (S6).

[3686] Fig. 1232 illustrates TV Program Data Selecting Software 20652c10 stored in Keyword Search Timer Recording Software Storage Area 20652c (Fig. 1223) of Communication Device 200, which selects the TV program data to be replayed. Referring to the present drawing, CPU 211 (Fig. 1) retrieves the timer recording TV program relating data from Timer Recording TV Program Relating Data Storage

Area 20652b7 (Fig. 1211) (S1), and displays a list of the timer recording TV program relating data on LCD 201 (Fig. 1) (S2). The TV program data to be replayed is selected therefrom by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S3).

[3687] Fig. 1233 illustrates TV Program Data Replaying Software H52c11 stored in Keyword Search Timer Recording Software Storage Area H52c (Fig. 1222) of Host H (Fig. 429) and TV Program Data Replaying Software 20652c11 stored in Keyword Search Timer Recording Software Storage Area 20652c (Fig. 1223) of Communication Device 200, which replay the TV program data selected in S3 of Fig. 1232. Referring to the present drawing, CPU 211 (Fig. 1) sends the TV program ID of the TV program data selected in S3 of Fig. 12232 to Host H (S1). Upon receiving the TV Program ID from Communication Device 200 (S2), Host H sends the corresponding TV program data to Communication Device 200 (S3). Communication Device 200 receives the TV program data from Host H (S4), and replays the TV program data, and outputs video data and audio data from LCD 201 (Fig. 1) and Speaker 216, respectively (S5). Here, the entire TV program data may be downloaded before being replayed or, as another embodi-

ment, the replay process described in S5 may be initiated as soon as a replayable portion of the TV program data is downloaded. The portion of the TV program data which is replayed may be stored for the next replay, or as another embodiment, be erased from Communication Device 200.

[3688] *<<Keyword Search Timer Recording Function -- Another Embodiment02>>*

[3689] Figs. 1234a and 1234b illustrate another embodiment of the foregoing embodiments of Timer Recording Software H52c7 stored in Keyword Search Timer Recording Software Storage Area H52c of Host H (Fig. 429) and Timer Recording Software 20652c7 stored in Keyword Search Timer Recording Software Storage Area 20652c of Communication Device 200, in which the timer recording is administered by Communication Device 200 whereas the TV program data is stored in Host H (instead of Communication Device 200). Referring to the present drawing, CPU 211 (Fig. 1)of Communication Device 200 retrieves the TV program time frame data from Timer Recording TV Program Relating Data Storage Area 20652b7 (Fig. 1211) (S1). If the time frame data matches with the current time (S2), CPU 211 sends the corresponding TV program data recording request to Host H (S3). Here, the corresponding

TV program data recording request is a request to record the TV program data which is identified in S2. Upon receiving the corresponding TV program data recording request from Communication Device 200 (S4), Host H retrieves the corresponding TV program data from TV Program Data Storage Area H52b1 (Fig. 1192) (S5), and stores the data in Timer Recording TV Program Relating Data Storage Area H52b7 (Fig. 1199) of the corresponding user ID (S6). Host H then registers the corresponding record completed flag data (of Timer Recording TV Program Relating Data Storage Area H52b7 (Fig. 1199)) as '1' (S7). Host H sends the corresponding TV program data record completed notice (S8), which is received by Communication Device 200 (S9). CPU 211 registers the corresponding record completed flag data (of Timer Recording TV Program Relating Data Storage Area 20652b7 (Fig. 1211)) as '1' (S10).

[3690] *<<Keyword Search Timer Recording Function -- Another Embodiment03>>*

[3691] Figs. 1235 through 1241b illustrate another embodiment of the present function storing the TV program data in Personal Computer PC. Here, Personal Computer PC may be any type of personal computer including the ones de-

scribed in this specification (excluding Host H (Fig. 429) and Communication Device 200).

[3692] Fig. 1235 illustrates the storage area included in Personal Computer PC. As described in the present drawing, Personal Computer PC includes Keyword Search Timer Recording Information Storage Area PC52a of which the data and the software programs stored therein are described in Fig. 1236.

[3693] Fig. 1236 illustrates the storage areas included in Keyword Search Timer Recording Information Storage Area PC52a (Fig. 1235). As described in the present drawing, Keyword Search Timer Recording Information Storage Area PC52a includes Keyword Search Timer Recording Data Storage Area PC52b and Keyword Search Timer Recording Software Storage Area PC52c. Keyword Search Timer Recording Data Storage Area PC52b stores the data necessary to implement the present function on the side of Personal Computer PC, such as the ones described in Figs. 1237 and 1238. Keyword Search Timer Recording Software Storage Area PC52c stores the software programs necessary to implement the present function on the side of Personal Computer PC, such as the one described in Fig. 1239.

[3694] The software programs stored in Keyword Search Timer Recording Software Storage Area PC52c (Fig. 1236) are downloaded from Host H (Fig. 429) in the similar manner described in Figs. 401 through 407.

[3695] Fig. 1237 illustrates the storage area included in Keyword Search Timer Recording Data Storage Area PC52b (Fig. 1236). As described in the present drawing, Keyword Search Timer Recording Data Storage Area PC52b includes Timer Recording TV Program Relating Data Storage Area PC52b7 of which the data stored therein are described in Fig. 1238.

[3696] Fig. 1238 illustrates the data stored in Timer Recording TV Program Relating Data Storage Area PC52b7. As described in the present drawing, Timer Recording TV Program Relating Data Storage Area PC52b7 comprises five columns, i.e., 'TV Program ID', 'TV Program Channel Data', 'TV Program Time Frame Data #1', 'Record Completed Flag Data', and 'TV Program Data'. Column 'TV Program ID' stores the TV program IDs which are described hereinbefore. Column 'TV Program Channel Data' stores the TV program channel data, and each TV program channel data represents the channel number of the TV program of the corresponding TV program ID. Column 'TV Program Time

Frame Data #1' stores the TV program time frame data #1, and each TV program time frame data #1 represents the starting time and the ending time of the TV program represented by the corresponding TV program ID. Column 'Record Completed Flag Data' stores the record completed flag data, and each record completed flag data comprises either '1' or '0' wherein '1' indicates that the TV program data of the corresponding TV program ID is recorded and stored in column 'TV Program Data', and '0' indicates that the TV program data of the corresponding TV program ID is not recorded and stored in column 'TV Program Data'. Column 'TV Program Data' stores the TV program data, and each TV program data comprises audiovisual data representing a TV program designed to be broadcasted and/or displayed on LCD 201 (Fig. 1) of Communication Device 200.

[3697] Fig. 1239 illustrates the software program stored in Keyword Search Timer Recording Software Storage Area PC52c. As described in the present drawing, Keyword Search Timer Recording Software Storage Area PC52c stores Timer Recording Software PC52c7. Timer Recording Software PC52c7 is the software program described in Figs. 1240a and 1240b.

[3698] Figs. 1240a and 1240b illustrate Timer Recording Software H52c7 stored in Keyword Search Timer Recording Software Storage Area H52c of Host H (Fig. 429), Timer Recording Software 20652c7 stored in Keyword Search Timer Recording Software Storage Area 20652c of Communication Device 200, and Timer Recording Software PC52c7 stored in Keyword Search Timer Recording Software Storage Area PC52c (Fig. 1239), in which the timer recording is administered by Communication Device 200 whereas the TV program data is stored in Personal Computer PC (Fig. 1235) (instead of Communication Device 200 and/or Host H). Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the TV program time frame data from Timer Recording TV Program Relating Data Storage Area 20652b7 (Fig. 1211) (S1). If the time frame data matches with the current time (S2), CPU 211 sends the corresponding TV program data recording request to Host H (S3). Here, the corresponding TV program data recording request is a request to record the TV program data which is identified in S2. Upon receiving the corresponding TV program data recording request from Communication Device 200 (S4), Host H retrieves the corresponding TV program data from TV Pro-

gram Data Storage Area H52b1 (Fig. 1192) (S5), and sends the data to Personal Computer PC (Fig. 1235) (S6). Personal Computer PC stores the data in Timer Recording TV Program Relating Data Storage Area PC52b7 (Fig. 1238) (S7). Host H then registers the corresponding record completed flag data (of Timer Recording TV Program Relating Data Storage Area H52b7 (Fig. 1199)) as '1' (S8). Personal Computer PC registers the corresponding record completed flag data (of Timer Recording TV Program Relating Data Storage Area PC52b7 (Fig. 1238)) as '1' (S9). Host H sends the corresponding TV program data record completed notice (S10) and Personal Computer PC sends the corresponding TV program data record completed notice (S11), both of which are received by Communication Device 200 (S12). CPU 211 of Communication Device 200 registers the corresponding record completed flag data (of Timer Recording TV Program Relating Data Storage Area 20652b7 (Fig. 1211)) as '1' (S13).

[3699] Figs. 1241a and 1241b illustrate another embodiment, described in Figs. 1240a and 1240b, of Timer Recording Software H52c7 stored in Keyword Search Timer Recording Software Storage Area H52c of Host H (Fig. 429), Timer Recording Software 20652c7 stored in Keyword

Search Timer Recording Software Storage Area 20652c of Communication Device 200, and Timer Recording Software PC52c7 stored in Keyword Search Timer Recording Software Storage Area PC52c (Fig. 1239) of Personal Computer PC, in which the timer recording is administered by Host H and the TV program data is stored in Personal Computer PC (Fig. 1235) (instead of Communication Device 200 and/or Host H). Referring to the present drawing, Host H retrieves the TV program time frame data from Timer Recording TV Program Relating Data Storage Area H52b7 (Fig. 1199) (S1). If the time frame data matches with the current time (S2), Host H sends the corresponding TV program data to Personal Computer PC (S3). Upon receiving the TV program data from Host H (S4), Personal Computer PC stores the data in Timer Recording TV Program Relating Data Storage Area PC52b7 (Fig. 1238) (S5). Host H then registers the corresponding record completed flag data (of Timer Recording TV Program Relating Data Storage Area H52b7 (Fig. 1199)) as '1' (S6). Personal Computer PC registers the corresponding record completed flag data (of Timer Recording TV Program Relating Data Storage Area PC52b7 (Fig. 1238)) as '1' (S7). Host H sends the corresponding TV program data record completed no-

tice (S8) and Personal Computer PC sends the corresponding TV program data record completed notice (S9), both of which are received by Communication Device 200 (S10). CPU 211 of Communication Device 200 registers the corresponding record completed flag data (of Timer Recording TV Program Relating Data Storage Area 20652b7 (Fig. 1211)) as '1' (S11).

[3700] *<<Keyword Search Timer Recording Function -- Another Embodiment04>>*

[3701] Figs. 1242 through 1254 illustrate another embodiment of the present function wherein the timer record setting is performed by Communication Device 200, the timer recording is administered by Personal Computer PC, and the TV program data is stored in Personal Computer PC. Here, Personal Computer PC may be any type of personal computer including the ones described in this specification (excluding Host H (Fig. 429) and Communication Device 200).

[3702] Fig. 1242 illustrates the software programs stored in Keyword Search Timer Recording Software Storage Area H52c (Fig. 1200) of Host H (Fig. 429). As described in the present drawing, Keyword Search Timer Recording Software Storage Area H52c stores Keyword Search Timer

Recording Data Sending Software H52c2 and Timer Recording Software H52c7. Keyword Search Timer Recording Data Sending Software H52c2 is the software program described in Fig. 1246. Timer Recording Software H52c7 is the software program described in Fig. 1253a.

[3703] Fig. 1243 illustrates the software programs stored in Keyword Search Timer Recording Software Storage Area 20652c (Fig. 1212) of Communication Device 200. As described in the present drawing, Keyword Search Timer Recording Software Storage Area 20652c stores Keyword Search Timer Recording Data Request Sending Software 20652c1, Keyword Search Timer Recording Data Receiving Software 20652c3, Timer Recording Setting By Actors/Actresses Software 20652c4, Timer Recording Setting By Category Software 20652c5, Re-run Avoiding Process Software 20652c6, Timer Recording TV Program Relating Data Sending/Receiving Software 20652c6a, Timer Recording Software 20652c7, and Timer Recording Notification Displaying Software 20652c8. Keyword Search Timer Recording Data Request Sending Software 20652c1 is the software program described in Fig. 1245. Keyword Search Timer Recording Data Receiving Software 20652c3 is the software program described in Fig. 1247. Timer

Recording Setting By Actors/Actresses Software 20652c4 is the software program described in Fig. 1248. Timer Recording Setting By Category Software 20652c5 is the software program described in Fig. 1249. Re-run Avoiding Process Software 20652c6 is the software program described in Figs. 1250 and 1251. Timer Recording TV Program Relating Data Sending/Receiving Software 20652c6a is the software program described in Fig. 1252. Timer Recording Software 20652c7 is the software program described in Fig. 1253a. Timer Recording Notification Displaying Software 20652c8 is the software program described in Fig. 1254.

[3704] Fig. 1244 illustrates the software programs stored in Keyword Search Timer Recording Software Storage Area PC52c (Fig. 1236) of Personal Computer PC (Fig. 1235). As described in the present drawing, Keyword Search Timer Recording Software Storage Area PC52c stores Timer Recording TV Program Relating Data Sending/Receiving Software PC52c6a and Timer Recording Software PC52c7. Timer Recording TV Program Relating Data Sending/Receiving Software PC52c6a is the software program described in Fig. 1252. Timer Recording Software PC52c7 is the software program described in Fig. 1253a.

[3705] Fig. 1245 illustrates Keyword Search Timer Recording Data Request Sending Software 20652c1 stored in Keyword Search Timer Recording Software Storage Area 20652c (Fig. 1243) of Communication Device 200, which sends the keyword search timer recording data request to Host H (Fig. 429). Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends the keyword search timer recording data request to Host H (S1). Here, the keyword search timer recording data request is a request singal which requests to send back the keyword search timer recording data stored in Keyword Search Timer Recording Data Storage Area H52b (Fig. 1191) of Host H.

[3706] Fig. 1246 illustrates Keyword Search Timer Recording Data Sending Software H52c2 stored in Keyword Search Timer Recording Software Storage Area H52c (Fig. 1242) of Host H (Fig. 429), which sends the keyword search timer recording data to Communication Device 200. Referring to the present drawing, Host H, upon receiving the keyword search timer recording data request from Communication Device 200 (S1), retrieves the keyword search timer recording data from Keyword Search Timer Recording Data Storage Area H52b (Fig. 1191), excluding the

data stored in TV Program Data Storage Area H52b1 (Fig. 1192). The data stored in Timer Recording TV Program Relating Data Storage Area H52b7 (Fig. 1199) are also retrieved, however, only of the ones of the corresponding user ID.

[3707] Fig. 1247 illustrates Keyword Search Timer Recording Data Receiving Software 20652c3 stored in Keyword Search Timer Recording Software Storage Area 20652c (Fig. 1243) of Communication Device 200, which receives and stores the keyword search timer recording data sent from Host H (Fig. 429). Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 receives the keyword search timer recording data from Host H (S1). CPU 211 then stores the data in Keyword Search Timer Recording Data Storage Area 20652b (Fig. 1203) (S2).

[3708] Fig. 1248 illustrates Timer Recording Setting By Actors/Actresses Software 20652c4 stored in Keyword Search Timer Recording Software Storage Area 20652c (Fig. 1243) of Communication Device 200, which sets the timer recording by inputting the names of actors and/or actresses. Referring to the present drawing, the actors/actresses' name input area in which the names of actors and/or actresses are to be input is displayed on LCD 201

(Fig. 1) (S1). The names of actors and/or actresses are input to the area by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2). CPU 211 searches TV Program Actors/Actresses Data Storage Area 20652b4 (Fig. 1208) (S3), and identifies the TV program IDs of the TV programs having the actors and/or actresses identified in S2 acting therein, as well as implementing the re-run avoiding process (S4). The re-run avoiding process is the process described in Figs. 1250 and 1251. CPU 211 identifies the corresponding TV program channel data and the TV program time frame data #1 of each TV program ID by referring to TV Program Channel Data Storage Area 20652b3 (Fig. 1206) and TV Program Time Frame Data Storage Area 20652b2 (Figs. 1204 and/or 1205), and stores the TV program IDs, the TV program channel data, and the TV program time frame data #1 (collectively referred to as the 'timer recording setting data' hereinafter) in Timer Recording TV Program Relating Data Storage Area 20652b7 (Fig. 1211) (S5). The timer recording setting data is displayed on LCD 201 (S6).

[3709] Fig. 1249 illustrates Timer Recording Setting By Category Software 20652c5 stored in Keyword Search Timer Recording Software Storage Area 20652c (Fig. 1243) of

Communication Device 200, which sets the timer recording by inputting the names of the categories. Referring to the present drawing, the category input area in which the names of the categories are to be input is displayed on LCD 201 (Fig. 1) (S1). The names of the categories are input to the area by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2). CPU 211 searches TV Program Category Data Storage Area 20652b5 (Fig. 1209) (S3), and identifies the TV program IDs of the TV programs pertaining to the categories identified in S2, as well as implementing the re-run avoiding process (S4). The re-run avoiding process is the process described in Figs. 1250 and 1251. CPU 211 identifies the corresponding TV program channel data and the TV program time frame data #1 of each TV program ID by referring to TV Program Channel Data Storage Area 20652b3 (Fig. 1206) and TV Program Time Frame Data Storage Area 20652b2 (Figs. 1204 and/or 1205), and stores the TV program IDs, the TV program channel data, and the TV program time frame data #1 (i.e., timer recording setting data) in Timer Recording TV Program Relating Data Storage Area 20652b7 (Fig. 1211) (S5). The timer recording setting data is displayed on LCD 201 (S6).

[3710] Fig. 1250 illustrates Re-run Avoiding Process Software 20652c6 stored in Keyword Search Timer Recording Software Storage Area 20652c (Fig. 1243) of Communication Device 200, which avoids selecting the re-runs of the TV programs which are already selected. Referring to the present drawing, CPU 211 (Fig. 1) searches column 'TV Program Time Frame Data #1' of TV Program Time Frame Data Storage Area 20652b2 described in Fig. 1204 (S1). The re-runs are avoided from being selected by prohibiting to search column 'TV Program Time Frame Data #2'.

[3711] Fig. 1251 illustrates another embodiment of Re-run Avoiding Process Software 20652c6 stored in Keyword Search Timer Recording Software Storage Area 20652c (Fig. 1243) of Communication Device 200, which avoids selecting the re-runs of the TV programs which are already selected. Referring to the present drawing, CPU 211 (Fig. 1) of searches column 'Re-run Flag Data' of TV Program Time Frame Data Storage Area 20652b2 described in Fig. 1205 (S1). If the re-run flag data is '1' (S2), CPU 211 prohibits the corresponding TV program data to be timer recorded (S3). In the example described in Fig. 1205, the TV programs #1 and #5 of which the TV program time frame data #1 are '20:30 - 21:00' and '20:30 -

21:30' respectively, are re-runs (i.e., the re-run flag data are registered as '1'). Therefore, the TV program data of which the TV program IDs are TV programs #1 and #5 on-aired on 20:30 - 21:00 and 20:30 - 21:30 respectively are refrained from being timer recorded.

[3712] Fig. 1252 illustrates Timer Recording TV Program Relating Data Sending/Receiving Software 20652c6a stored in Keyword Search Timer Recording Software Storage Area 20652c (Fig. 1243) of Communication Device 200 and Timer Recording TV Program Relating Data Sending/Receiving Software PC52c6a stored in Keyword Search Timer Recording Software Storage Area PC52c (Fig. 1244) of Personal Computer PC (Fig. 1235), which sends and receives the timer recording TV program relating data. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the timer recording TV program relating data from Timer Recording TV Program Relating Data Storage Area 20652b7 (Fig. 1211) (S1). CPU 211 then sends the timer recording TV program relating data to Personal Computer PC (S2). Upon receiving the timer recording TV program relating data from Communication Device 200 (S3), Personal Computer PC stores the data in Timer Recording TV Program Relating Data Storage Area

PC52b7 (S4).

[3713] Figs. 1253a and 1253b illustrate Timer Recording Software H52c7 stored in Keyword Search Timer Recording Software Storage Area H52c (Fig. 1242) of Host H (Fig. 429), Timer Recording Software 20652c7 stored in Keyword Search Timer Recording Software Storage Area 20652c (Fig. 1243) of Communication Device 200, and Timer Recording Software PC52c7 of Personal Computer PC (Fig. 1235), which implement the timer recording in accordance to the settings described in Figs. 1216 and/or 1217. Referring to the present drawing, Personal Computer PC retrieves the TV program time frame data from Timer Recording TV Program Relating Data Storage Area PC52b7 (Fig. 1238) (S1). If the time frame data matches with the current time (S2), Personal Computer PC sends the corresponding TV program data downloading request to Host H (S3). Upon receiving the corresponding TV program data downloading request from Personal Computer PC (S4), Host H retrieves the corresponding TV program data from TV Program Data Storage Area H52b1 (Fig. 1192) (S5), and sends the data to Personal Computer PC (S6). Personal Computer PC receives the corresponding TV program data from Host H (S7), and stores the corre-

sponding TV program data in Timer Recording TV Program Relating Data Storage Area PC52b7 (Fig. 1238) (S8). Personal Computer PC then registers the corresponding record completed flag data (of Timer Recording TV Program Relating Data Storage Area PC52b7) as '1' (S9). Host H registers the corresponding record completed flag data (of Timer Recording TV Program Relating Data Storage Area H52b7 (Fig. 1199)) as '1' (S10). Personal Computer PC sends the corresponding record completed flag data (of Timer Recording TV Program Relating Data Storage Area PC52b7) (S11), which is received by Communication Device 200 (S12). Communication Device 200 registers the corresponding record completed flag data (of Timer Recording TV Program Relating Data Storage Area 20652b7 (Fig. 1211)) as '1' (S13).

[3714] Fig. 1254 illustrates Timer Recording Notification Displaying Software 20652c8 stored in Keyword Search Timer Recording Software Storage Area 20652c (Fig. 1243) of Communication Device 200, which displays a notification on LCD 201 (Fig. 1) when a new TV program data is recorded. Referring to the present drawing, CPU 211 periodically checks the status of TV Timer Recording TV Program Relating Data Storage Area 20652b7 (Fig. 1211)

(S1). If a new TV program data stored (S2), CPU 211 displays the timer recording notification on LCD 201 (Fig. 1) which indicates that a new TV program data is recorded (S3).

[3715] For the avoidance of doubt, Figs. 1221 through 1221b are also applicable to this embodiment.

[3716] *<<Keyword Search Timer Recording Function -- Summary>>*

[3717] (1) A communication device comprising a microphone, a speaker, a display, an input device and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and a timer recording mode, a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, a certain criteria is input via said input device, among a plurality of TV program data one or more of qualified TV program data which meet said criteria are recorded when said timer recording mode is implemented.

[3718] (2) A timer recording software program which is downloadable via network wherein a certain criteria is set, among a plurality of TV program data one or more of qualified TV program data which meet said criteria are recorded under the control of said timer recording soft-

ware program.

[3719] (3) The re-runs of said qualified TV program data are prohibited from being recorded.

[3720] (4) Said qualified TV program data are recorded in said communication device.

[3721] (5) Said qualified TV program data are recorded in a host.

[3722] (6) Said qualified TV program data are recorded in a personal computer.

[3723] (7) The timer recording of said qualified TV program is implemented by said communication device.

[3724] (8) The timer recording of said qualified TV program is implemented by a host.

[3725] (9) The timer recording of said qualified TV program is implemented by a personal computer.

[3726] (10) The TV program data which pertain to a certain category are deemed as said qualified TV program data.

[3727] (11) The TV program data in which selected actors and/or actresses are acting are deemed as said qualified TV program data.

[3728] *<<Weather Forecast Displaying Function>>*

[3729] Figs. 1255 through 1288 illustrate the weather forecast displaying function which displays on LCD 201 (Fig. 1) the

weather forecast of the current location of Communication Device 200.

[3730] Fig. 1255 illustrates the storage area included in Host H (Fig. 429). As described in the present drawing, Host H includes Weather Forecast Displaying Information Storage Area H53a of which the data and the software programs stored therein are described in Fig. 1256.

[3731] Fig. 1256 illustrates the storage areas included in Weather Forecast Displaying Information Storage Area H53a (Fig. 1255). As described in the present drawing, Weather Forecast Displaying Information Storage Area H53a includes Weather Forecast Displaying Data Storage Area H53b and Weather Forecast Displaying Software Storage Area H53c. Weather Forecast Displaying Data Storage Area H53b stores the data necessary to implement the present function on the side of Host H (Fig. 429), such as the ones described in Figs. 1258 through 1261. Weather Forecast Displaying Software Storage Area H53c stores the software programs necessary to implement the present function on the side of Host H (Fig. 429), such as the ones described in Fig. 1262.

[3732] Fig. 1257 illustrates the storage areas included in Weather Forecast Displaying Data Storage Area H53b (Fig. 1256).

As described in the present drawing, Weather Forecast Displaying Data Storage Area H53b includes Geographic Area Data Storage Area H53b1, Weather Forecast Data Storage Area H53b2, Location Name Data Storage Area H53b3, Calculated GPS Data Storage Area H53b4, and Work Area H53b5. Geographic Area Data Storage Area H53b1 stores the data described in Fig. 1258. Weather Forecast Data Storage Area H53b2 stores the data described in Fig. 1259. Location Name Data Storage Area H53b3 stores the data described in Fig. 1260. Calculated GPS Data Storage Area H53b4 stores the data described in Fig. 1261. Work Area H53b5 is utilized as a work area for Host H (Fig. 429) to perform calculation and store data temporarily.

[3733] Fig. 1258 illustrates the data stored in Geographic Area Data Storage Area H53b1 (Fig. 1257). As described in the present drawing, Geographic Area Data Storage Area H53b1 comprises two columns, i.e., 'Location ID' and 'Geographic Area Data'. Column 'Location ID' stores the location IDs, and each location ID is an identification of the corresponding geographic area data stored in column 'Geographic Area Data'. Column 'Geographic Area Data' stores the geographic area data, and each geographic area

data represents the predetermined geographic area. In the example described in the present drawing, Geographic Area Data Storage Area H53b1 stores the following data: the location ID 'Location #1" and the geographic area data 'Geographic Area Data#1'; the location ID 'Location #2" and the geographic area data 'Geographic Area Data#2'; the location ID 'Location #3" and the geographic area data 'Geographic Area Data#3'; and the location ID 'Location #4" and the geographic area data 'Geographic Area Data#4'. Here, 'Geographic Area Data#1' represents the geographic area of Sacramento, CA; 'Geographic Area Data#2' represents the geographic area of San Jose, CA; 'Geographic Area Data#3' represents the geographic area of San Francisco, CA; and 'Geographic Area Data#4' represents the geographic area of San Mateo, CA.

[3734] Fig. 1259 illustrates the data stored in Weather Forecast Data Storage Area H53b2 (Fig. 1257). As described in the present drawing, Weather Forecast Data Storage Area H53b2 comprises two columns, i.e., 'Location ID' and 'Weather Forecast Data'. Column 'Location ID' stores the location IDs described hereinbefore. Column 'Weather Forecast Data' stores the weather forecast data, and each weather forecast data represents the weather forecast of

the geographic area data corresponding to the location ID stored in Geographic Area Data Storage Area H53b1 (Fig. 1258). In the example described in the present drawing, Weather Forecast Data Storage Area H53b2 stores the following data: the location ID 'Location #1' and the weather forecast data 'Sunny'; the location ID 'Location #2' and the weather forecast data 'Sunny'; the location ID 'Location #3' and the weather forecast data 'Cloudy'; and the location ID 'Location #4' and the weather forecast data 'Cloudy'. By referring to the data stored in Geographic Area Data Storage Area H53b1 (Fig. 1258), the following is implied: the weather forecast of Sacramento, CA (Geographic Area Data#1) is 'Sunny'; the weather forecast of San Jose, CA (Geographic Area Data#2) is 'Sunny'; the weather forecast of San Francisco, CA (Geographic Area Data#3) is 'Cloudy'; and the weather forecast of San Mateo, CA (Geographic Area Data#4) is 'Cloudy'.

[3735] Fig. 1260 illustrates the data stored in Location Name Data Storage Area H53b3 (Fig. 1257). As described in the present drawing, Location Name Data Storage Area H53b3 comprises two columns, i.e., 'Location ID' and 'Location Name Data'. Column 'Location ID' stores the location IDs described hereinbefore. Column 'Location Name Data'

stores the location name data, and each location data represents the name of the geographic area data stored in Geographic Area Data Storage Area H53b1 (Fig. 1258) of the corresponding location ID. In the example described in the present drawing, Location Name Data Storage Area H53b3 stores the following data: the location ID 'Location #1' and the location name data 'Sacramento, CA' corresponding to the geographic area data 'Geographic Area Data#1' stored in Geographic Area Data Storage Area H53b1; the location ID 'Location #2' and the location name data 'San Jose, CA' corresponding to the geographic area data 'Geographic Area Data#2' stored in Geographic Area Data Storage Area H53b1; the location ID 'Location #3' and the location name data 'San Francisco, CA' corresponding to the geographic area data 'Geographic Area Data#3' stored in Geographic Area Data Storage Area H53b1; and the location ID 'Location #4' and the location name data 'San Mateo, CA' corresponding to the geographic area data 'Geographic Area Data#4' stored in Geographic Area Data Storage Area H53b1.

[3736] Fig. 1261 illustrates the data stored in Calculated GPS Data Storage Area H53b4 (Fig. 1257). As described in the present drawing, Calculated GPS Data Storage Area H53b4

comprises two columns, i.e., 'User ID' and 'Calculated GPS Data'. Column 'User ID' stores the user IDs, and each user ID represents the identification of Communication Device 200. Column 'Calculated GPS Data' stores the calculated GPS data, and each calculated GPS data represents the current geographic location of Communication Device 200 of the corresponding user ID in (x, y, z) format. In the example described in the present drawing, Calculated GPS Data Storage Area H53b4 stores the following data: the user ID 'User #1' and the calculated GPS data 'x1, y1, z1' of the Communication Device 200 of the corresponding user ID; the user ID 'User #2' and the calculated GPS data 'x2, y2, z2' of the Communication Device 200 of the corresponding user ID; and the user ID 'User #3' and the calculated GPS data 'x3, y3, z3' of the Communication Device 200 of the corresponding user ID.

[3737] Fig. 1262 illustrates the software programs stored in Weather Forecast Displaying Software Storage Area H53c (Fig. 1256). As described in the present drawing, Weather Forecast Displaying Software Storage Area H53c stores Weather Forecast Data Updating Software H53c1, Weather Forecast Displaying Data Sending/Receiving Software H53c1a, and Com. Device Pin-pointing Software H53c2.

Weather Forecast Data Updating Software H53c1 is the software program described in Fig. 1271. Weather Forecast Displaying Data Sending/Receiving Software H53c1a is the software program described in Fig. 1272. Com. Device Pin-pointing Software H53c2 is the software program described in Fig. 1273.

[3738] Fig. 1263 illustrates the storage area included in RAM 206 (Fig. 1) of Communication Device 200. As described in the present drawing, RAM 206 includes Weather Forecast Displaying Information Storage Area 20653a of which the data and the software programs stored therein are described in Fig. 1264.

[3739] Fig. 1264 illustrates the storage areas included in Weather Forecast Displaying Information Storage Area 20653a (Fig. 1263). As described in the present drawing, Weather Forecast Displaying Information Storage Area 20653a includes Weather Forecast Displaying Data Storage Area 20653b and Weather Forecast Displaying Software Storage Area 20653c. Weather Forecast Displaying Data Storage Area 20653b stores the data necessary to implement the present function on the side of Communication Device 200, such as the ones described in Figs. 1266 through 1269. Weather Forecast Displaying Software Storage Area

20653c stores the software programs necessary to implement the present function on the side of Communication Device 200, such as the ones described in Fig. 1270.

[3740] The software programs stored in Weather Forecast Displaying Software Storage Area 20653c (Fig. 1264) are downloaded from Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[3741] Fig. 1265 illustrates the storage areas included in Weather Forecast Displaying Data Storage Area 20653b (Fig. 1264). As described in the present drawing, Weather Forecast Displaying Data Storage Area 20653b includes Geographic Area Data Storage Area 20653b1, Weather Forecast Data Storage Area 20653b2, Location Name Data Storage Area 20653b3, Calculated GPS Data Storage Area 20653b4, and Work Area 20653b5. Geographic Area Data Storage Area 20653b1 stores the data described in Fig. 1266. Weather Forecast Data Storage Area 20653b2 stores the data described in Fig. 1267. Location Name Data Storage Area 20653b3 stores the data described in Fig. 1268. Calculated GPS Data Storage Area 20653b4 stores the data described in Fig. 1269. Work Area 20653b5 is utilized as a work area for Communication Device 200 to perform calculation and store data temporarily.

[3742] Fig. 1266 illustrates the data stored in Geographic Area Data Storage Area 20653b1 (Fig. 1265). As described in the present drawing, Geographic Area Data Storage Area 20653b1 comprises two columns, i.e., 'Location ID' and 'Geographic Area Data'. Column 'Location ID' stores the location IDs, and each location ID is an identification of the corresponding geographic area data stored in column 'Geographic Area Data'. Column 'Geographic Area Data' stores the geographic area data, and each geographic area data represents the predetermined geographic area. In the example described in the present drawing, Geographic Area Data Storage Area 20653b1 stores the following data: the location ID 'Location #1' and the geographic area data 'Geographic Area Data#1'; the location ID 'Location #2' and the geographic area data 'Geographic Area Data#2'; the location ID 'Location #3' and the geographic area data 'Geographic Area Data#3'; and the location ID 'Location #4' and the geographic area data 'Geographic Area Data#4'. Here, 'Geographic Area Data#1' represents the geographic area of Sacramento, CA; 'Geographic Area Data#2' represents the geographic area of San Jose, CA; 'Geographic Area Data#3' represents the geographic area of San Francisco, CA; and 'Geographic Area Data#4' repre-

sents the geographic area of San Mateo, CA.

[3743] Fig. 1267 illustrates the data stored in Weather Forecast Data Storage Area 20653b2 (Fig. 1265). As described in the present drawing, Weather Forecast Data Storage Area 20653b2 comprises two columns, i.e., 'Location ID' and 'Weather Forecast Data'. Column 'Location ID' stores the location IDs described hereinbefore. Column 'Weather Forecast Data' stores the weather forecast data, and each weather forecast data represents the weather forecast of the geographic area data corresponding to the location ID stored in Geographic Area Data Storage Area 20653b1 (Fig. 1266). In the example described in the present drawing, Weather Forecast Data Storage Area 20653b2 stores the following data: the location ID 'Location #1' and the weather forecast data 'Sunny'; the location ID 'Location #2' and the weather forecast data 'Sunny'; the location ID 'Location #3' and the weather forecast data 'Cloudy'; and the location ID 'Location #4' and the weather forecast data 'Cloudy'. By referring to the data stored in Geographic Area Data Storage Area 20653b1 (Fig. 1266), the following is implied: the weather forecast of Sacramento, CA (Geographic Area Data#1) is 'Sunny'; the weather forecast of San Jose, CA (Geographic Area Data#2) is 'Sunny'; the

weather forecast of San Francisco, CA (Geographic Area Data#3) is 'Cloudy'; and the weather forecast of San Mateo, CA (Geographic Area Data#4) is 'Cloudy'.

[3744] Fig. 1268 illustrates the data stored in Location Name Data Storage Area 20653b3 (Fig. 1265). As described in the present drawing, Location Name Data Storage Area 20653b3 comprises two columns, i.e., 'Location ID' and 'Location Name Data'. Column 'Location ID' stores the location IDs described hereinbefore. Column 'Location Name Data' stores the location name data, and each location data represents the name of the geographic area data stored in Geographic Area Data Storage Area 20653b1 (Fig. 1266) of the corresponding location ID. In the example described in the present drawing, Location Name Data Storage Area 20653b3 stores the following data: the location ID 'Location #1' and the location name data 'Sacramento, CA' corresponding to the geographic area data 'Geographic Area Data#1' stored in Geographic Area Data Storage Area 20653b1; the location ID 'Location #2' and the location name data 'San Jose, CA' corresponding to the geographic area data 'Geographic Area Data#2' stored in Geographic Area Data Storage Area 20653b1; the location ID 'Location #3' and the location name data 'San Francisco,

CA' corresponding to the geographic area data 'Geographic Area Data#3' stored in Geographic Area Data Storage Area 20653b1; and the location ID 'Location #4' and the location name data 'San Mateo, CA' corresponding to the geographic area data 'Geographic Area Data#4' stored in Geographic Area Data Storage Area 20653b1.

[3745] Fig. 1269 illustrates the data stored in Calculated GPS Data Storage Area 20653b4 (Fig. 1265). As described in the present drawing, Calculated GPS Data Storage Area 20653b4 comprises two columns, i.e., 'User ID' and 'Calculated GPS Data'. Column 'User ID' stores the user ID, which represents the identification of Communication Device 200. Column 'Calculated GPS Data' stores the calculated GPS data, which represents the current geographic location of Communication Device 200 of the corresponding user ID in (x, y, z) format. In the example described in the present drawing, Calculated GPS Data Storage Area 20653b4 stores the following data: the user ID 'User #1' and the calculated GPS data 'x1, y1, z1' of the Communication Device 200 of 'User #1'.

[3746] Fig. 1270 illustrates the software programs stored in Weather Forecast Displaying Software Storage Area 20653c (Fig. 1264). As described in the present drawing,

Weather Forecast Displaying Software Storage Area 20653c stores Weather Forecast Data Sending/Receiving Software 20653c1a, Com. Device Pin-pointing Software 20653c2, Geographic Area Data Identifying Software 20653c3, Weather Forecast Data Identifying Software 20653c4, Location Name Data Identifying Software 20653c5, and Current Location Weather Forecasting Data Displaying Software 20653c6. Weather Forecast Data Sending/Receiving Software 20653c1a is the software program described in Fig. 1272. Com. Device Pin-pointing Software 20653c2 is the software program described in Figs. 1273 and 1274. Geographic Area Data Identifying Software 20653c3 is the software program described in Fig. 1275. Weather Forecast Data Identifying Software 20653c4 is the software program described in Fig. 1276. Location Name Data Identifying Software 20653c5 is the software program described in Fig. 1277. Current Location Weather Forecasting Data Displaying Software 20653c6 is the software program described in Fig. 1278.

[3747] Fig. 1271 illustrates Weather Forecast Data Updating Software H53c1 stored in Weather Forecast Displaying Software Storage Area H53c (Fig. 1262) of Host H (Fig. 429), which periodically updates the weather forecast data

stored in Weather Forecast Data Storage Area H53b2 (Fig. 1259). Referring to the present drawing, Host H periodically checks for the updated weather forecast data (S1). If any updated weather forecast data is received from another host computer (S2), Host H updates Weather Forecast Data Storage Area H53b2 (Fig. 1259) accordingly (S3).

[3748] Fig. 1272 illustrates Weather Forecast Displaying Data Sending/Receiving Software H53c1a stored in Weather Forecast Displaying Software Storage Area H53c (Fig. 1262) of Host H (Fig. 429) and Weather Forecast Data Sending/Receiving Software 20653c1a stored in Weather Forecast Displaying Software Storage Area 20653c (Fig. 1270) of Communication Device 200, which sends and receives the weather forecast displaying data. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends the weather forecast displaying data request to Host H (S1). Here, the weather forecast displaying data request is a request to send the weather forecast displaying data to Communication Device 200. Upon receiving the weather forecast displaying data request from Communication Device 200 (S2), Host H retrieves the weather forecast displaying data from Weather Forecast Displaying Data Storage Area H53b (Fig. 1257) (Host H)

(S3), and sends the data to Communication Device 200 (S4). Upon receiving the weather forecast displaying data from Host H (S5), CPU 211 stores the weather forecast displaying data in Weather Forecast Displaying Data Storage Area 20653b (Fig. 1265) (S6).

[3749] Fig. 1273 illustrates Com. Device Pin-pointing Software H53c2 stored in Weather Forecast Displaying Software Storage Area H53c (Fig. 1262) of Host H (Fig. 429) and Com. Device Pin-pointing Software 20653c2 stored in Weather Forecast Displaying Software Storage Area 20653c (Fig. 1270) of Communication Device 200, which identifies the current geographic location of Communication Device 200. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 collects the GPS raw data from the near base stations (S1). CPU 211 sends the raw GPS data to Host H (S2). Upon receiving the raw GPS data (S3), Host H produces the calculated GPS data by referring to the raw GPS data (S4). Host H stores the calculated GPS data in Calculated GPS Data Storage Area H53b4 (Fig. 1261) (S5). Host H then retrieves the calculated GPS data from Calculated GPS Data Storage Area H53b4 (Fig. 1261) (S6), and sends the data to Communication Device 200 (S7). Upon receiving the calculated GPS

data from Host H (S8), CPU 211 stores the data in Calculated GPS Data Storage Area 20653b4 (Fig. 1269) (S9). Here, the GPS raw data are the primitive data utilized to produce the calculated GPS data, and the calculated GPS data are the data representing the location in (x, y, z) format.

[3750] Fig. 1274 illustrates another embodiment of the sequence described in Fig. 1273 in which the entire process is performed solely by Com. Device Pin-pointing Software 20653c2 stored in Weather Forecast Displaying Software Storage Area 20653c (Fig. 1270) of Communication Device 200. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 collects the raw GPS data from the near base stations (S1). CPU 211 then produces the calculated GPS data by referring to the raw GPS data (S2), and stores the calculated GPS data in Calculated GPS Data Storage Area 20653b4 (Fig. 1269) (S3).

[3751] Fig. 1275 illustrates Geographic Area Data Identifying Software 20653c3 stored in Weather Forecast Displaying Software Storage Area 20653c (Fig. 1270) of Communication Device 200, which identifies the geographic area data to identify the geographic area in which Communiction Device 200 is located. Referring to the present drawing,

CPU 211 (Fig. 1) of Communication Device 200 retrieves the calculated GPS data from Calculated GPS Data Storage Area 20653b4 (Fig. 1269) (S1). CPU 211 then searches Geographic Area Data Storage Area 20653b1 (Fig. 1266) (S2) to identify the geographic area data in which the calculated GPS data is located (S3). CPU 211 stores the geographic area data identified in S3 in Work Area 20653b5 (Fig. 1265) (S4).

[3752] Fig. 1276 illustrates Weather Forecast Data Identifying Software 20653c4 stored in Weather Forecast Displaying Software Storage Area 20653c (Fig. 1270) of Communication Device 200, which identifies the weather forecast data of the geographic area in which Communiction Device 200 is located. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 searches Weather Forecast Data Storage Area 20653b2 (Fig. 1267) for the location ID corresponding to the geographic area data identified in S3 of Fig. 1275 (S1). CPU 211 identifies the weather forecast data (S2), and stores the weather forecast data in Work Area 20653b5 (Fig. 1265) (S3).

[3753] Fig. 1277 illustrates Location Name Data Identifying Software 20653c5 stored in Weather Forecast Displaying Software Storage Area 20653c (Fig. 1270) of Communication

Device 200, which identifies the location name of the geographic area in which Communiction Device 200 is located. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 searches Location Name Data Storage Area 20653b3 (Fig. 1268) for the location ID corresponding to the geographic area data identified in S3 of Fig. 1275 (S1). CPU 211 identifies the location name data (S2), and stores the location name data in Work Area 20653b5 (Fig. 1265) (S3).

[3754] Fig. 1278 illustrates Current Location Weather Forecasting Data Displaying Software 20653c6 stored in Weather Forecast Displaying Software Storage Area 20653c (Fig. 1270) of Communication Device 200, which displays the current location weather forecasting data. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the geographic area data from Work Area 20653b5 (Fig. 1265) (S1). CPU 211 then retrieves the weather forecast data from Work Area 20653b5 (Fig. 1265) (S2). CPU 211 further retrieves the location name data from Work Area 20653b5 (Fig. 1265) (S3). The data retrieved in S1 through S3 (collectively defined as the 'current location weather forecasting data') are displayed on LCD 201 (Fig. 1) (S4).

[3755] *<<Weather Forecast Displaying Function -- Another Embodiment01>>*

[3756] Figs. 1279 through 1288 illustrate another embodiment of the present function wherein Host H (Fig. 429) implements the major task in performing the present function.

[3757] Fig. 1279 illustrates the software programs stored in Weather Forecast Displaying Software Storage Area H53c (Fig. 1256). As described in the present drawing, Weather Forecast Displaying Software Storage Area H53c stores Weather Forecast Data Updating Software H53c1, Com. Device Pin-pointing Software H53c2, Geographic Area Data Identifying Software H53c3, Weather Forecast Data Identifying Software H53c4, Location Name Data Identifying Software H53c5, and Current Location Weather Forecasting Data Sending/Receiving Software H53c5a. Weather Forecast Data Updating Software H53c1 is the software program described in Fig. 1281. Com. Device Pin-pointing Software H53c2 is the software program described in Fig. 1282. Geographic Area Data Identifying Software H53c3 is the software program described in Fig. 1284. Weather Forecast Data Identifying Software H53c4 is the software program described in Fig. 1285. Location Name Data Identifying Software H53c5 is the software program de-

scribed in Fig. 1286. Current Location Weather Forecasting Data Sending/Receiving Software H53c5a is the software program described in Fig. 1287.

[3758] Fig. 1280 illustrates the ssoftware programs stored in Weather Forecast Displaying Software Storage Area 20653c (Fig. 1264). As described in the present drawing, Weather Forecast Displaying Software Storage Area 20653c stores Com. Device Pin-pointing Software 20653c2, Geographic Area Data Identifying Software 20653c3, Weather Forecast Data Identifying Software 20653c4, Location Name Data Identifying Software 20653c5, Current Location Weather Forecasting Data Sending/Receiving Software 20653c5a, and Current Location Weather Forecasting Data Displaying Software 20653c6. Com. Device Pin-pointing Software 20653c2 is the software program described in Figs. 1282 and 1283. Geographic Area Data Identifying Software 20653c3 is the software program described in Fig. 1284. Weather Forecast Data Identifying Software 20653c4 is the software program described in Fig. 1285. Location Name Data Identifying Software 20653c5 is the software program described in Fig. 1286. Current Location Weather Forecasting Data Sending/Receiving Software 20653c5a is the

software program described in Fig. 1287. Current Location Weather Forecasting Data Displaying Software 20653c6 is the software program described in Fig. 1288.

[3759] Fig. 1281 illustrates Weather Forecast Data Updating Software H53c1 stored in Weather Forecast Displaying Software Storage Area H53c (Fig. 1279) of Host H (Fig. 429), which periodically updates the weather forecast data stored in Weather Forecast Data Storage Area H53b2 (Fig. 1259). Referring to the present drawing, Host H periodically checks for the updated weather forecast data (S1). If any updated weather forecast data is received from another host computer (S2), Host H updates Weather Forecast Data Storage Area H53b2 (Fig. 1259) accordingly (S3).

[3760] Fig. 1282 illustrates Com. Device Pin-pointing Software H53c2 stored in Weather Forecast Displaying Software Storage Area H53c (Fig. 1279) of Host H (Fig. 429) and Com. Device Pin-pointing Software 20653c2 stored in Weather Forecast Displaying Software Storage Area 20653c (Fig. 1280) of Communication Device 200, which identifies the current geographic location of Communication Device 200. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 collects the GPS raw data from the near base stations (S1). CPU 211

sends the raw GPS data to Host H (S2). Upon receiving the raw GPS data (S3), Host H produces the calculated GPS data by referring to the raw GPS data (S4). Host H stores the calculated GPS data in Calculated GPS Data Storage Area H53b4 (Fig. 1261) (S5). Host H then retrieves the calculated GPS data from Calculated GPS Data Storage Area H53b4 (Fig. 1261) (S6), and sends the data to Communication Device 200 (S7). Upon receiving the calculated GPS data from Host H (S8), CPU 211 stores the data in Calculated GPS Data Storage Area 20653b4 (Fig. 1269) (S9). Here, the GPS raw data are the primitive data utilized to produce the calculated GPS data, and the calculated GPS data are the data representing the location in (x, y, z) format.

[3761] Fig. 1283 illustrates another embodiment of the sequence described in Fig. 1282 in which the entire process is performed solely by Com. Device Pin-pointing Software 20653c2 stored in Weather Forecast Displaying Software Storage Area 20653c (Fig. 1280) of Communication Device 200. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 collects the raw GPS data from the near base stations (S1). CPU 211 then produces the calculated GPS data by referring to the raw GPS data (S2),

and stores the calculated GPS data in Calculated GPS Data Storage Area 20653b4 (Fig. 1269) (S3).

[3762] Fig. 1284 illustrates Geographic Area Data Identifying Software H53c3 stored in Weather Forecast Displaying Software Storage Area H53c (Fig. 1279) of Host H (Fig. 429) and Geographic Area Data Identifying Software 20653c3 stored in Weather Forecast Displaying Software Storage Area 20653c (Fig. 1280) of Communication Device 200, which identifies the geographic area data to identify the geographic area in which Communiction Device 200 is located. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a geographic area data request to Host H (S1). Here, the geographic area data request is a request to send the geographic area data to Communication Device 200. Upon receiving the geographic area data request from Communication Device 200 (S2), Host H retrieves the calculated GPS data from Calculated GPS Data Storage Area H53b4 (Fig. 1261) (S3), and searches Geographic Area Data Storage Area H53b1 (Fig. 1258) to identify the geographic area data in which the calculated GPS data is located (S4). Host H identifies the geographic area data (S5), and stores the data in Work Area H53b5 (Fig. 1257) (S6).

[3763] Fig. 1285 illustrates Weather Forecast Data Identifying Software H53c4 stored in Weather Forecast Displaying Software Storage Area H53c (Fig. 1279) of Host H (Fig. 429) and Weather Forecast Data Identifying Software 20653c4 stored in Weather Forecast Displaying Software Storage Area 20653c (Fig. 1280) of Communication Device 200, which identifies the weather forecast data of the geographic area in which Communiction Device 200 is located. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a weather forecast data request to Host H (S1). Here, the weather forecast data request is a request to send the weather forecast data to Communication Device 200. Upon receiving the weather forecast data request from Communication Device 200 (S2), Host H searches Weather Forecast Data Storage Area H53b2 (Fig. 1259) for the location ID corresponding to the geographic area data identified in S5 of Fig. 1284 (S3). Host H identifies the weather forecast data corresponding to the location ID (S4). Host H then stores the weather forecast data in Work Area H53b5 (Fig. 1257) (S5).

[3764] Fig. 1286 illustrates Location Name Data Identifying Software H53c5 stored in Weather Forecast Displaying Soft-

ware Storage Area H53c (Fig. 1279) of Host H (Fig. 429) and Location Name Data Identifying Software 20653c5 stored in Weather Forecast Displaying Software Storage Area 20653c (Fig. 1280) of Communication Device 200, which identifies the location name of the geographic area in which Communiction Device 200 is located. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a location name data request to Host H (S1). Here, the location name data request is a request to send the location name data to Communication Device 200. Upon receiving the location name data request from Communication Device 200 (S2), Host H searchs Location Name Data Storage Area H53b3 (Fig. 1260) for the location ID corresponding to the geographic area data identified in S5 of Fig. 1284 (S3). Host H identifies the location name data corresponding to the location ID (S4). Host H then stores the location name data in Work Area H53b5 (Fig. 1257) (S5).

[3765] Fig. 1287 illustrates Current Location Weather Forecasting Data Sending/Receiving Software H53c5a stored in Weather Forecast Displaying Software Storage Area H53c (Fig. 1279) of Host H (Fig. 429) and Current Location Weather Forecasting Data Sending/Receiving Software

20653c5a stored in Weather Forecast Displaying Software Storage Area 20653c (Fig. 1280) of Communication Device 200, which sends and receives the current location weather forecasting data. Referring to the present drawing, Host H retrieves the geographic area data from Work Area H53b5 (Fig. 1257) (S1). Host H retrieves the weather forecast data from Work Area H53b5 (Fig. 1257) (S2). Host H then retrieves the location name data from Work Area H53b5 (Fig. 1257) (S3). Host H sends the data retrieved in S1 through S3 (collectively defined as the 'current location weather forecasting data') to Communication Device 200 (S4). Upon receiving the data sent in S4 (S5), Communication Device 200 stores the data in Work Area 20653b5 (Fig. 1265) (S6).

[3766] Fig. 1288 illustrates Current Location Weather Forecasting Data Displaying Software 20653c6 stored in Weather Forecast Displaying Software Storage Area 20653c (Fig. 1280) of Communication Device 200, which displays the current location weather forecasting data on LCD 201 (Fig. 1). Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the geographic area data from Work Area 20653b5 (Fig. 1265) (S1). CPU 211 then retrieves the weather forecast data from Work Area

20653b5 (Fig. 1265) (S2). CPU 211 further retrieves the location name data from Work Area 20653b5 (Fig. 1265) (S3). The data retrieved in S1 through S3 are displayed on LCD 201 (Fig. 1) (S4).

[3767] *<<Weather Forecast Displaying Function -- Summary>>*

[3768] (1) A communication device comprising a microphone, a speaker, a display, an input device and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and a weather forecast displaying mode, a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, the weather forecast of the current location of said communication device is displayed on said display when said weather forecast displaying mode is implemented.

[3769] (2) A weather forecast displaying software program wherein the current location of a communication device is identified and the weather forecast of said current location is displayed on a display of said communication device.

[3770] *<<Multiple Language Displaying Function>>*

[3771] Figs. 1289 through 1331 illustrate the multiple language displaying function wherein a language is selected from a plurality of languages, such as English, Japanese, French, and German, which is utilized to operate Communication Device 200.

[3772] Fig. 1289 illustrates the storage area included in RAM 206 (Fig. 1). As described in the present drawing, RAM 206 includes Multiple Language Displaying Info Storage Area 20654a of which the data and the software programs stored therein are described in Fig. 1290.

[3773] The data and software programs stored in Multiple Language Displaying Info Storage Area 20654a (Fig. 1289) are downloaded from Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[3774] Fig. 1290 illustrates the storage areas included in Multiple Language Displaying Info Storage Area 20654a (Fig. 1289). As described in the present drawing, Multiple Language Displaying Info Storage Area 20654a includes Multiple Language Displaying Data Storage Area 20654b and Multiple Language Displaying Software Storage Area 20654c. Multiple Language Displaying Data Storage Area 20654b stores the data necessary to implement the present function, such as the ones described in Figs. 1291

through 1298. Multiple Language Displaying Software Storage Area 20654c stores the software programs necessary to implement the present function, such as the ones described in Fig. 1299.

[3775] Fig. 1291 illustrates the storage areas included in Multiple Language Displaying Data Storage Area 20654b (Fig. 1290) . As described in the present drawing, Multiple Language Displaying Data Storage Area 20654b includes Language Tables Storage Area 20654b1, Language Type Data Storage Area 20654b2, Language Item Data Storage Area 20654b3, and Selected Language Table ID Storage Area 20654b4. Language Tables Storage Area 20654b1 stores the data described in Fig. 1292. Language Type Data Storage Area 20654b2 stores the data described in Fig. 1297. Language Item Data Storage Area 20654b3 stores the data described in Fig. 1298. Selected Language Table ID Storage Area 20654b4 stores the language table ID selected in S4s of Figs. 1300, 1308, 1316, and 1324.

[3776] Fig. 1292 illustrates the storage areas included in Language Tables Storage Area 20654b1 (Fig. 1291). As described in the present drawing, Language Tables Storage Area 20654b1 includes Language Table#1 Storage Area 20654b1a, Language Table#2 Storage Area 20654b1b,

Language Table#3 Storage Area 20654b1c, and Language Table#4 Storage Area 20654b1d. Language Table#1 Storage Area 20654b1a stores the data described in Fig. 1293. Language Table#2 Storage Area 20654b1b stores the data described in Fig. 1294. Language Table#3 Storage Area 20654b1c stores the data described in Fig. 1295. Language Table#4 Storage Area 20654b1d stores the data described in Fig. 1296.

[3777] Fig. 1293 illustrates the data stored in Language Table#1 Storage Area 20654b1a (Fig. 1292). As described in the present drawing, Language Table#1 Storage Area 20654b1a comprises two columns, i.e., 'Language Item ID' and 'Language Text Data'. Column 'Language Item ID' stores the langauge item IDs, and each language item ID represents the identification of the corresponding language text data.

[3778] Column 'Language Text Data' stores the language text data, and each language text data represents the English text data displayed on LCD 201 (Fig. 1). In the example described in the present drawing, Language Table#1 Storage Area 20654b1a stores the following data: the language item ID 'Language Item#1' and the corresponding language text data 'Open file'; the language item ID 'Lan-

guage Item#2' and the corresponding language text data 'Close file'; the language item ID 'Language Item#3' and the corresponding language text data 'Delete'; the language item ID 'Language Item#4' and the corresponding language text data 'Copy'; the language item ID 'Language Item#5' and the corresponding language text data 'Cut'; the language item ID 'Language Item#6' and the corresponding language text data 'Paste'; the language item ID 'Language Item#7' and the corresponding language text data 'Insert'; the language item ID 'Language Item#8' and the corresponding language text data 'File'; the language item ID 'Language Item#9' and the corresponding language text data 'Edit'; the language item ID 'Language Item#10' and the corresponding language text data 'View'; the language item ID 'Language Item#11' and the corresponding language text data 'Format'; the language item ID 'Language Item#12' and the corresponding language text data 'Tools'; the language item ID 'Language Item#13' and the corresponding language text data 'Window'; the language item ID 'Language Item#14' and the corresponding language text data 'Help'; the language item ID 'Language Item#15' and the corresponding language text data 'My Network'; the language item ID 'Language Item#16'

and the corresponding language text data 'Trash'; the language item ID 'Language Item#17' and the corresponding language text data 'Local Disk'; the language item ID 'Language Item#18' and the corresponding language text data 'Save'; the language item ID 'Language Item#19' and the corresponding language text data 'Yes'; the language item ID 'Language Item#20' and the corresponding language text data 'No'; and the language item ID 'Language Item#21' and the corresponding language text data 'Cancel'.

[3779] Fig. 1294 illustrates the data stored in Language Table#1 Storage Area 20654b1b (Fig. 1292). As described in the present drawing, Language Table#1 Storage Area 20654b1b comprises two columns, i.e., 'Language Item ID' and 'Language Text Data'. Column 'Language Item ID' stores the langauge item IDs, and each language item ID represents the identification of the corresponding language text data. Column 'Language Text Data' stores the language text data, and each language text data represents the Japanese text data displayed on LCD 201 (Fig. 1). In the example described in the present drawing, Language Table#1 Storage Area 20654b1b stores the following data: the language item ID 'Language Item#1' and the

corresponding language text data meaning 'Open file' in Japanese; the language item ID 'Language Item#2' and the corresponding language text data meaning 'Close file' in Japanese; the language item ID 'Language Item#3' and the corresponding language text data meaning 'Delete' in Japanese; the language item ID 'Language Item#4' and the corresponding language text data meaning 'Copy' in Japanese; the language item ID 'Language Item#5' and the corresponding language text data meaning 'Cut' in Japanese; the language item ID 'Language Item#6' and the corresponding language text data meaning 'Paste' in Japanese; the language item ID 'Language Item#7' and the corresponding language text data meaning 'Insert' in Japanese; the language item ID 'Language Item#8' and the corresponding language text data meaning 'File' in Japanese; the language item ID 'Language Item#9' and the corresponding language text data meaning 'Edit' in Japanese; the language item ID 'Language Item#10' and the corresponding language text data meaning 'View' in Japanese; the language item ID 'Language Item#11' and the corresponding language text data meaning 'Format' in Japanese; the language item ID 'Language Item#12' and the corresponding language text data meaning 'Tools' in

Japanese; the language item ID 'Language Item#13' and the corresponding language text data meaning 'Window' in Japanese; the language item ID 'Language Item#14' and the corresponding language text data meaning 'Help' in Japanese; the language item ID 'Language Item#15' and the corresponding language text data meaning 'My Network' in Japanese; the language item ID 'Language Item#16' and the corresponding language text data meaning 'Trash' in Japanese; the language item ID 'Language Item#17' and the corresponding language text data meaning 'Local Disk' in Japanese; the language item ID 'Language Item#18' and the corresponding language text data meaning 'Save' in Japanese; the language item ID 'Language Item#19' and the corresponding language text data meaning 'Yes' in Japanese; the language item ID 'Language Item#20' and the corresponding language text data meaning 'No' in Japanese; and the language item ID 'Language Item#21' and the corresponding language text data meaning 'Cancel' in Japanese.

[3780] Fig. 1295 illustrates the data stored in Language Table#1 Storage Area 20654b1c (Fig. 1292). As described in the present drawing, Language Table#1 Storage Area 20654b1c comprises two columns, i.e., 'Language Item ID'

and 'Language Text Data'. Column 'Language Item ID' stores the langauge item IDs, and each language item ID represents the identification of the corresponding language text data. Column 'Language Text Data' stores the language text data, and each language text data represents the French text data displayed on LCD 201 (Fig. 1). In the example described in the present drawing, Language Table#1 Storage Area 20654b1c stores the following data: the language item ID 'Language Item#1' and the corresponding language text data 'French#1' meaning 'Open file' in French; the language item ID 'Language Item#2' and the corresponding language text data 'French#2' meaning 'Close file' in French; the language item ID 'Language Item#3' and the corresponding language text data 'French#3' meaning 'Delete' in French; the language item ID 'Language Item#4' and the corresponding language text data 'French#4' meaning 'Copy' in French; the language item ID 'Language Item#5' and the corresponding language text data 'French#5' meaning 'Cut' in French; the language item ID 'Language Item#6' and the corresponding language text data 'French#6' meaning 'Paste' in French; the language item ID 'Language Item#7' and the corresponding language text data

'French#7' meaning 'Insert' in French; the language item ID 'Language Item#8' and the corresponding language text data 'French#8' meaning 'File' in French; the language item ID 'Language Item#9' and the corresponding language text data 'French#9' meaning 'Edit' in French; the language item ID 'Language Item#10' and the corresponding language text data 'French#10' meaning 'View' in French; the language item ID 'Language Item#11' and the corresponding language text data 'French#11' meaning 'Format' in French; the language item ID 'Language Item#12' and the corresponding language text data 'French#12' meaning 'Tools' in French; the language item ID 'Language Item#13' and the corresponding language text data 'French#13' meaning 'Window' in French; the language item ID 'Language Item#14' and the corresponding language text data 'French#14' meaning 'Help' in French; the language item ID 'Language Item#15' and the corresponding language text data 'French#15' meaning 'My Network' in French; the language item ID 'Language Item#16' and the corresponding language text data 'French#16' meaning 'Trash' in French; the language item ID 'Language Item#17' and the corresponding language text data 'French#17' meaning 'Local Disk' in French; the

language item ID 'Language Item#18' and the corresponding language text data 'French#18' meaning 'Save' in French; the language item ID 'Language Item#19' and the corresponding language text data 'French#19' meaning 'Yes' in French; the language item ID 'Language Item#20' and the corresponding language text data 'French#20' meaning 'No' in French; and the language item ID 'Language Item#21' and the corresponding language text data 'French#21' meaning 'Cancel' in French.

[3781] Fig. 1296 illustrates the data stored in Language Table#1 Storage Area 20654b1d (Fig. 1292). As described in the present drawing, Language Table#1 Storage Area 20654b1d comprises two columns, i.e., 'Language Item ID' and 'Language Text Data'. Column 'Language Item ID' stores the langauge item IDs, and each language item ID represents the identification of the corresponding language text data. Column 'Language Text Data' stores the language text data, and each language text data represents the German text data displayed on LCD 201 (Fig. 1). In the example described in the present drawing, Language Table#1 Storage Area 20654b1d stores the following data: the language item ID 'Language Item#1' and the corresponding language text data 'German#1' meaning

'Open file' in German; the language item ID 'Language Item#2' and the corresponding language text data 'German#2' meaning 'Close file' in German; the language item ID 'Language Item#3' and the corresponding language text data 'German#3' meaning 'Delete' in German; the language item ID 'Language Item#4' and the corresponding language text data 'German#4' meaning 'Copy' in German; the language item ID 'Language Item#5' and the corresponding language text data 'German#5' meaning 'Cut' in German; the language item ID 'Language Item#6' and the corresponding language text data 'German#6' meaning 'Paste' in German; the language item ID 'Language Item#7' and the corresponding language text data 'German#7' meaning 'Insert' in German; the language item ID 'Language Item#8' and the corresponding language text data 'German#8' meaning 'File' in German; the language item ID 'Language Item#9' and the corresponding language text data 'German#9' meaning 'Edit' in German; the language item ID 'Language Item#10' and the corresponding language text data 'German#10' meaning 'View' in German; the language item ID 'Language Item#11' and the corresponding language text data 'German#11' meaning 'Format' in German; the language item ID 'Language

Item#12' and the corresponding language text data 'German#12' meaning 'Tools' in German; the language item ID 'Language Item#13' and the corresponding language text data 'German#13' meaning 'Window' in German; the language item ID 'Language Item#14' and the corresponding language text data 'German#14' meaning 'Help' in German; the language item ID 'Language Item#15' and the corresponding language text data 'German#15' meaning 'My Network' in German; the language item ID 'Language Item#16' and the corresponding language text data 'German#16' meaning 'Trash' in German; the language item ID 'Language Item#17' and the corresponding language text data 'German#17' meaning 'Local Disk' in German; the language item ID 'Language Item#18' and the corresponding language text data 'German#18' meaning 'Save' in German; the language item ID 'Language Item#19' and the corresponding language text data 'German#19' meaning 'Yes' in German; the language item ID 'Language Item#20' and the corresponding language text data 'German#20' meaning 'No' in German; and the language item ID 'Language Item#21' and the corresponding language text data 'German#21' meaning 'Cancel' in German.

[3782] Fig. 1297 illustrates data stored in Language Type Data

Storage Area 20654b2 (Fig. 1291). As described in the present drawing, Language Type Data Storage Area 20654b2 comprises two columns, i.e., 'Language Table ID' and 'Language Type Data'. Column 'Language Table ID' stores the language table ID, and each language table ID represents the identification of the storage areas included in Language Tables Storage Area 20654b1 (Fig. 1292). Column 'Language Type Data' stores the language type data, and each language type data represents the type of the language utilized in the language table of the corresponding language table ID. In the example described in the present drawing, Language Type Data Storage Area 20654b2 stores the following data: the language table ID 'Language Table#1' and the corresponding language type data 'English'; the language table ID 'Language Table#2' and the corresponding language type data 'Japanese'; the language table ID 'Language Table#3' and the corresponding language type data 'French'; and the language table ID 'Language Table#4' and the corresponding language type data 'German'. Here, the language table ID 'Language Table#1' is an identification of Language Table#1 Storage Area 20654b1a (Fig. 1293); the language table ID 'Language Table#2' is an identification of Lan-

guage Table#2 Storage Area 20654b1b (Fig. 1294); the language table ID 'Language Table#3' is an identification of Language Table#3 Storage Area 20654b1c (Fig. 1295); and the language table ID 'Language Table#4' is an identification of Language Table#4 Storage Area 20654b1d (Fig. 1296).

[3783] Fig. 1298 illustrates the data stored in Language Item Data Storage Area 20654b3 (Fig. 1291). As described in the present drawing, Language Item Data Storage Area 20654b3 comprises two columns, i.e., 'Language Item ID' and 'Language Item Data'. Column 'Language Item ID' stores the langauge item IDs, and each language item ID represents the identification of the corresponding language item data. Column 'Language Item Data' stores the language item data, and each language item data represents the content and/or the meaning of the language text data displayed on LCD 201 (Fig. 1). In the example described in the present drawing, Language Item Data Storage Area 20654b3 stores the following data: the language item ID 'Language Item#1' and the corresponding language item data 'Open file'; the language item ID 'Language Item#2' and the corresponding language item data 'Close file'; the language item ID 'Language Item#3' and

the corresponding language item data 'Delete'; the language item ID 'Language Item#4' and the corresponding language item data 'Copy'; the language item ID 'Language Item#5' and the corresponding language item data 'Cut'; the language item ID 'Language Item#6' and the corresponding language item data 'Paste'; the language item ID 'Language Item#7' and the corresponding language item data 'Insert'; the language item ID 'Language Item#8' and the corresponding language item data 'File'; the language item ID 'Language Item#9' and the corresponding language item data 'Edit'; the language item ID 'Language Item#10' and the corresponding language item data 'View'; the language item ID 'Language Item#11' and the corresponding language item data 'Format'; the language item ID 'Language Item#12' and the corresponding language item data 'Tools'; the language item ID 'Language Item#13' and the corresponding language item data 'Window'; the language item ID 'Language Item#14' and the corresponding language item data 'Help'; the language item ID 'Language Item#15' and the corresponding language item data 'My Network'; the language item ID 'Language Item#16' and the corresponding language item data 'Trash'; the language item ID 'Language Item#17' and

the corresponding language item data 'Local Disk'; the language item ID 'Language Item#18' and the corresponding language item data 'Save'; the language item ID 'Language Item#19' and the corresponding language item data 'Yes'; the language item ID 'Language Item#20' and the corresponding language item data 'No'; and the language item ID 'Language Item#21' and the corresponding language item data 'Cancel'. Primarily, the data stored in column 'Language Item Data' are same as the ones stored in column 'Language Text Data' of Language Table#1 Storage Area 20654b1a (Fig. 1293).

[3784] Fig. 1299 illustrates the software program stored in Multiple Language Displaying Software Storage Area 20654c (Fig. 1290). As described in the present drawing, Multiple Language Displaying Software Storage Area 20654c stores Language Selecting Software 20654c1, Selected Language Displaying Software 20654c2, Language Text Data Displaying Software For Word Processor 20654c3a, Language Text Data Displaying Software For Word Processor 20654c3b, and Language Text Data Displaying Software For Explorer 20654c4.Language Selecting Software 20654c1 is the software program described in Figs. 1300, 1308, 1316, and 1324. Selected Language Displaying

Software 20654c2 is the software program described in Figs. 1301, 1309, 1317, and 1325. Language Text Data Displaying Software For Word Processor 20654c3a is the software program described in Figs. 1302, 1310, 1318, and 1326. Language Text Data Displaying Software For Word Processor 20654c3b is the software program described in Figs. 1304, 1312, 1320, and 1328. Language Text Data Displaying Software For Explorer 20654c4 is the software program described in Figs. 1306, 1314, 1322, and 1330.

[3785] *<<Multiple Language Displaying Function -- Utilizing English>>*

[3786] Fig. 1300 illustrates Language Selecting Software 20654c1 stored in Multiple Language Displaying Software Storage Area 20654c (Fig. 1299) which selects the language utilized to operate Communication Device 200 from a plurality of languages. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the language type data from Language Type Data Storage Area 20654b2 (Fig. 1297) (S1), and Displays a list of available languages on LCD 201 (Fig. 1) (S2). In the present example, the following languages are displayed on LCD 201: English, Japanese, French, and German. A certain language is selected therefrom by utilizing Input Device

210 (Fig. 1) or via voice recognition system (S3). Assume that 'English' is selected in S3. CPU 211 then identifes the language table ID corresponding to the language type data in Language Type Data Storage Area 20654b2 (Fig. 1297), and stores the language table ID (Language Table#1) in Selected Language Table ID Storage Area 20654b4 (Fig. 1291) (S4).

[3787] Fig. 1301 illustrates Selected Language Displaying Software 20654c2 stored in Multiple Language Displaying Software Storage Area 20654c (Fig. 1299) which displays and operates with the language selected in S3 of Fig. 1300 (i.e., English). Referring to the present drawing, when Communication Device 200 is powered on (S1), CPU 211 (Fig. 1) of Communication Device 200 retrieves the selected language table ID (Language Table#1) from Selected Language Table ID Storage Area 20654b4 (Fig. 1291) (S2). CPU 211 then identifies the storage area corresponding to the language table ID selected in S2 (Language Table#1 Storage Area 20654b1a (Fig. 1293)) in Language Tables Storage Area 20654b1 (Fig. 1292) (S3). Language text data displaying process is initiated thereafter of which the details are described hereinafter (S4).

[3788] Fig. 1302 illustrates Language Text Data Displaying Soft-

ware For Word Processor 20654c3a stored in Multiple Language Displaying Software Storage Area 20654c (Fig. 1299) which displays the language text data at the time a word processor, such as MS Word and WordPerfect is executed. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 executes a word processor in response to the signal input by the user of Communication Device 200 indicating to activate and execute the word processor (S1). In the process of displaying the word processor on LCD 201 (Fig. 1), the following steps of S2 through S8 are implemented. Namely, CPU 211 identifies the language item ID 'Language Item#8' in Language Table#1 Storage Area 20654b1a (Fig. 1293) and displays the corresponding language text data 'File' at the predetermined location in the word processor (S2). CPU 211 identifies the language item ID 'Language Item#9' in Language Table#1 Storage Area 20654b1a (Fig. 1293) and displays the corresponding language text data 'Edit' at the predetermined location in the word processor (S3). CPU 211 identifies the language item ID 'Language Item#10' in Language Table#1 Storage Area 20654b1a (Fig. 1293) and displays the corresponding language text data 'View' at the predetermined location in the word processor (S4).

CPU 211 identifies the language item ID 'Language Item#11' in Language Table#1 Storage Area 20654b1a (Fig. 1293) and displays the corresponding language text data 'Format' at the predetermined location in the word processor (S5). CPU 211 identifies the language item ID 'Language Item#12' in Language Table#1 Storage Area 20654b1a (Fig. 1293) and displays the corresponding language text data 'Tools' at the predetermined location in the word processor (S6). CPU 211 identifies the language item ID 'Language Item#13' in Language Table#1 Storage Area 20654b1a (Fig. 1293) and displays the corresponding language text data 'Window' at the predetermined location in the word processor (S7). CPU 211 identifies the language item ID 'Language Item#14' in Language Table#1 Storage Area 20654b1a (Fig. 1293) and displays the corresponding language text data 'Help' at the predetermined location in the word processor (S8). Alphanumeric data is input to the word processor by utilizing Input Device 210 (Fig. 1) or via voice recognition system thereafter (S9).

[3789] Fig. 1303 illustrates the data displayed on LCD 201 (Fig. 1) of Communication Device 200 at the time Language Text Data Displaying Software For Word Processor

20654c3a (Fig. 1302) is implemented. As described in the present drawing, the word processor described in Fig. 1302 is primarily composed of Menu Bar 20154MB and Alphanumeric Data Input Area 20154ADIA wherein the language text data described in S2 through S8 of Fig. 1302 are displayed on Menu Bar 20154MB and alphanumeric data are input in Alphanumeric Data Input Area 20154ADIA. In the example described in the present drawing, 20154MBF is the language text data processed in S2 of the previous drawing; 20154MBE is the language text data processed in S3 of the previous drawing; 20154MBV is the language text data processed in S4 of the previous drawing; 20154MBF is the language text data processed in S5 of the previous drawing; 20154MBT is the language text data processed in S6 of the previous drawing; 20154MBW is the language text data processed in S7 of the previous drawing; and 20154MBH is the language text data processed in S8 of the previous drawing.

[3790] Fig. 1304 illustrates Language Text Data Displaying Software For Word Processor 20654c3b stored in Multiple Language Displaying Software Storage Area 20654c (Fig. 1299) which displays a prompt on LCD 201 (Fig. 1) at the time a word processor is closed. Referring to the present

drawing, CPU 211 (Fig. 1) of Communication Device 200 intiates the closing process of the word processor in response to the signal input by the user of Communication Device 200 indicating to close the word processor (S1). In the process of closing the word processor, the following steps of S2 through S5 are implemented. Namely, CPU 211 identifies the language item ID 'Language Item#18' in Language Table#1 Storage Area 20654b1a (Fig. 1293) and displays the corresponding language text data 'Save' at the predetermined location in the word processor (S2). CPU 211 identifies the language item ID 'Language Item#19' in Language Table#1 Storage Area 20654b1a (Fig. 1293) and displays the corresponding language text data 'Yes' at the predetermined location in the word processor (S3). CPU 211 identifies the language item ID 'Language Item#20' in Language Table#1 Storage Area 20654b1a (Fig. 1293) and displays the corresponding language text data 'No' at the predetermined location in the word processor (S4). CPU 211 identifies the language item ID 'Language Item#21' in Language Table#1 Storage Area 20654b1a (Fig. 1293) and displays the corresponding language text data 'Cancel' at the predetermined location in the word processor (S5). The save signal indicating to save

the alphanumeric data input in S9 of Fig. 1302 is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system, assuming that the user of Communication Device 200 intends to save the data (S6), and the data are saved in a predermined location in RAM 206 (Fig. 1) (S7). The word processor is closed thereafter (S8).

[3791] Fig. 1305 illustrates the data displayed on LCD 201 (Fig. 1) of Communication Device 200 at the time Language Text Data Displaying Software For Word Processor 20654c3b (Fig. 1304) is implemented. As described in the present drawing, Prompt 20154Pr is displayed on LCD 201 (Fig. 1) at the time Language Text Data Displaying Software For Word Processor 20654c3a (Fig. 1302) is closed. As described in the present drawing, Prompt 20154Pr is primarily composed of 20154PrS, 20154PrY, 20154PrN, and 20154PrC. In the example described in the present drawing, 20154PrS is the language text data processed in S2 of the previous drawing; 20154PrY is the language text data processed in S3 of the previous drawing; 20154PrN is the language text data processed in S4 of the previous drawing; and 20154PrC is the language text data processed in S5 of the previous drawing.

[3792] Fig. 1306 illustrates Language Text Data Displaying Soft-

ware For Explorer 20654c4 stored in Multiple Language Displaying Software Storage Area 20654c (Fig. 1299) which displays the language text data at the time a Windows Explorer like software program which displays folders and/or directories and the structures thereof is executed. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 executes Windows Explorer like software program in response to the signal input by the user of Communication Device 200 indicating to activate and execute the software program (S1). In the process of displaying the Windows Explorer like software program on LCD 201 (Fig. 1), the steps of S2 through S4 are implemented. Namely, CPU 211 identifies the language item ID 'Language Item#15' in Language Table#1 Storage Area 20654b1a (Fig. 1293) and displays the corresponding language text data 'My Network' at the predetermined location in the Windows Explorer like software program (S2). CPU 211 identifies the language item ID 'Language Item#16' in Language Table#1 Storage Area 20654b1a (Fig. 1293) and displays the corresponding language text data 'Trash' at the predetermined location in the Windows Explorer like software program(S3). CPU 211 identifies the language item ID 'Language Item#17' in

Language Table#1 Storage Area 20654b1a (Fig. 1293) and displays the corresponding language text data 'Local Disk' at the predetermined location in the Windows Explorer like software program(S4).

[3793] Fig. 1307 illustrates the data displayed on LCD 201 (Fig. 1) of Communication Device 200 at the time Language Text Data Displaying Software For Explorer 20654c4 (Fig. 1306) is executed. As described in the present drawing, 20154LD, 20154MN, and 20154Tr are displayed on LCD 201 (Fig. 1) at the time Language Text Data Displaying Software For Explorer 20654c4 is executed. As described in the present drawing, 20154LD is the language text data processed in S4 of the previous drawing; 20154MN is the language text data processed in S2 of the previous drawing; and 20154Tr is the language text data processed in S3 of the previous drawing.

[3794] *<<Multiple Language Displaying Function -- Utilizing Japanese>>*

[3795] Fig. 1308 illustrates Language Selecting Software 20654c1 stored in Multiple Language Displaying Software Storage Area 20654c (Fig. 1299) which selects the language utilized to operate Communication Device 200 from a plurality of languages. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the

language type data from Language Type Data Storage Area 20654b2 (Fig. 1297) (S1), and Displays a list of available languages on LCD 201 (Fig. 1) (S2). In the present example, the following languages are displayed on LCD 201: English, Japanese, French, and German. A certain language is selected therefrom by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S3). Assume that 'Japanese' is selected in S3. CPU 211 then identifes the language table ID corresponding to the language type data in Language Type Data Storage Area 20654b2 (Fig. 1297), and stores the language table ID (Language Table#2) in Selected Language Table ID Storage Area 20654b4 (Fig. 1291) (S4).

[3796] Fig. 1309 illustrates Selected Language Displaying Software 20654c2 stored in Multiple Language Displaying Software Storage Area 20654c (Fig. 1299) which displays and operates with the language selected in S3 of Fig. 1308 (i.e., Japanese). Referring to the present drawing, when Communication Device 200 is powered on (S1), CPU 211 (Fig. 1) of Communication Device 200 retrieves the selected language table ID (Language Table#2) from Selected Language Table ID Storage Area 20654b4 (Fig. 1291) (S2). CPU 211 then identifies the storage area cor-

responding to the language table ID selected in S2 (Language Table#2 Storage Area 20654b1b (Fig. 1294)) in Language Tables Storage Area 20654b1 (Fig. 1292) (S3). Language text data displaying process is initiated thereafter of which the details are described hereinafter (S4).

[3797] Fig. 1310 illustrates Language Text Data Displaying Software For Word Processor 20654c3a stored in Multiple Language Displaying Software Storage Area 20654c (Fig. 1299) which displays the language text data at the time a word processor, such as MS Word and WordPerfect is executed. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 executes a word processor in response to the signal input by the user of Communication Device 200 indicating to activate and execute the word processor (S1). In the process of displaying the word processor on LCD 201 (Fig. 1), the following steps of S2 through S8 are implemented. Namely, CPU 211 identifies the language item ID 'Language Item#8' in Language Table#2 Storage Area 20654b1b (Fig. 1294) and displays the corresponding language text data indicating 'File' in Japanese at the predetermined location in the word processor (S2). CPU 211 identifies the language item ID 'Language Item#9' in Language Table#2 Storage Area

20654b1b (Fig. 1294) and displays the corresponding language text data indicating 'Edit' in Japanese at the predetermined location in the word processor (S3). CPU 211 identifies the language item ID 'Language Item#10' in Language Table#2 Storage Area 20654b1b (Fig. 1294) and displays the corresponding language text data indicating 'View' in Japanese at the predetermined location in the word processor (S4). CPU 211 identifies the language item ID 'Language Item#11' in Language Table#2 Storage Area 20654b1b (Fig. 1294) and displays the corresponding language text data indicating 'Format' in Japanese at the predetermined location in the word processor (S5). CPU 211 identifies the language item ID 'Language Item#12' in Language Table#2 Storage Area 20654b1b (Fig. 1294) and displays the corresponding language text data indicating 'Tools' in Japanese at the predetermined location in the word processor (S6). CPU 211 identifies the language item ID 'Language Item#13' in Language Table#2 Storage Area 20654b1b (Fig. 1294) and displays the corresponding language text data indicating 'Window' in Japanese at the predetermined location in the word processor (S7). CPU 211 identifies the language item ID 'Language Item#14' in Language Table#2 Storage Area 20654b1b (Fig. 1294) and

displays the corresponding language text data indicating 'Help' in Japanese at the predetermined location in the word processor (S8). Alphanumeric data is input to the word processor by utilizing Input Device 210 (Fig. 1) or via voice recognition system thereafter (S9).

[3798] Fig. 1311 illustrates the data displayed on LCD 201 (Fig. 1) of Communication Device 200 at the time Language Text Data Displaying Software For Word Processor 20654c3a (Fig. 1310) is implemented. As described in the present drawing, the word processor described in Fig. 1310 is primarily composed of Menu Bar 20154MB and Alphanumeric Data Input Area 20154ADIA wherein the language text data described in S2 through S8 of Fig. 1310 are displayed on Menu Bar 20154MB and alphanumeric data are input in Alphanumeric Data Input Area 20154ADIA. In the example described in the present drawing, 20154MBF is the language text data processed in S2 of the previous drawing; 20154MBE is the language text data processed in S3 of the previous drawing; 20154MBV is the language text data processed in S4 of the previous drawing; 20154MBF is the language text data processed in S5 of the previous drawing; 20154MBT is the language text data processed in S6 of the previous draw-

ing; 20154MBW is the language text data processed in S7 of the previous drawing; and 20154MBH is the language text data processed in S8 of the previous drawing.

[3799] Fig. 1312 illustrates Language Text Data Displaying Software For Word Processor 20654c3b stored in Multiple Language Displaying Software Storage Area 20654c (Fig. 1299) which displays a prompt on LCD 201 (Fig. 1) at the time a word processor is closed. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 intiates the closing process of the word processor in response to the signal input by the user of Communication Device 200 indicating to close the word processor (S1). In the process of closing the word processor, the following steps of S2 through S5 are implemented. Namely, CPU 211 identifies the language item ID 'Language Item#18' in Language Table#2 Storage Area 20654b1b (Fig. 1294) and displays the corresponding language text data indicating 'Save' in Japanese at the predetermined location in the word processor (S2). CPU 211 identifies the language item ID 'Language Item#19' in Language Table#2 Storage Area 20654b1b (Fig. 1294) and displays the corresponding language text data indicating 'Yes' in Japanese at the predetermined location in the word processor (S3). CPU 211

identifies the language item ID 'Language Item#20' in Language Table#2 Storage Area 20654b1b (Fig. 1294) and displays the corresponding language text data indicating 'No' in Japanese at the predetermined location in the word processor (S4). CPU 211 identifies the language item ID 'Language Item#21' in Language Table#2 Storage Area 20654b1b (Fig. 1294) and displays the corresponding language text data indicating 'Cancel' in Japanese at the predetermined location in the word processor (S5). The save signal indicating to save the alphanumeric data input in S9 of Fig. 1310 is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system, assuming that the user of Communication Device 200 intends to save the data (S6), and the data are saved in a predermined location in RAM 206 (Fig. 1) (S7). The word processor is closed thereafter (S8).

[3800] Fig. 1313 illustrates the data displayed on LCD 201 (Fig. 1) of Communication Device 200 at the time Language Text Data Displaying Software For Word Processor 20654c3b (Fig. 1312) is implemented. As described in the present drawing, Prompt 20154Pr is displayed on LCD 201 (Fig. 1) at the time Language Text Data Displaying Software For Word Processor 20654c3a (Fig. 1310) is

closed. As described in the present drawing, Prompt 20154Pr is primarily composed of 20154PrS, 20154PrY, 20154PrN, and 20154PrC. In the example described in the present drawing, 20154PrS is the language text data processed in S2 of the previous drawing; 20154PrY is the language text data processed in S3 of the previous drawing; 20154PrN is the language text data processed in S4 of the previous drawing; and 20154PrC is the language text data processed in S5 of the previous drawing.

[3801] Fig. 1314 illustrates Language Text Data Displaying Software For Explorer 20654c4 stored in Multiple Language Displaying Software Storage Area 20654c (Fig. 1299) which displays the language text data at the time a Windows Explorer like software program which displays folders and/or directories and the structures thereof is executed. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 executes Windows Explorer like software program in response to the signal input by the user of Communication Device 200 indicating to activate and execute the software program (S1). In the process of displaying the Windows Explorer like software program on LCD 201 (Fig. 1), the following steps of S2 through S4 are implemented. Namely, CPU 211 identifies

the language item ID 'Language Item#15' in Language Table#2 Storage Area 20654b1b (Fig. 1294) and displays the corresponding language text data indicating 'My Network' in Japanese at the predetermined location in the Windows Explorer like software program (S2). CPU 211 identifies the language item ID 'Language Item#16' in Language Table#2 Storage Area 20654b1b (Fig. 1294) and displays the corresponding language text data indicating 'Trash' in Japanese at the predetermined location in the Windows Explorer like software program(S3). CPU 211 identifies the language item ID 'Language Item#17' in Language Table#2 Storage Area 20654b1b (Fig. 1294) and displays the corresponding language text data indicating 'Local Disk' in Japanese at the predetermined location in the Windows Explorer like software program(S4).

[3802] Fig. 1315 illustrates the data displayed on LCD 201 (Fig. 1) of Communication Device 200 at the time Language Text Data Displaying Software For Explorer 20654c4 (Fig. 1314) is executed. As described in the present drawing, 20154LD, 20154MN, and 20154Tr are displayed on LCD 201 (Fig. 1) at the time Language Text Data Displaying Software For Explorer 20654c4 is executed. As described in the present drawing, 20154LD is the language text data

processed in S4 of the previous drawing; 20154MN is the language text data processed in S2 of the previous drawing; and 20154Tr is the language text data processed in S3 of the previous drawing.

[3803] *<<Multiple Language Displaying Function -- Utilizing French>>*

[3804] Fig. 1316 illustrates Language Selecting Software 20654c1 stored in Multiple Language Displaying Software Storage Area 20654c (Fig. 1299) which selects the language utilized to operate Communication Device 200 from a plurality of languages. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the language type data from Language Type Data Storage Area 20654b2 (Fig. 1297) (S1), and Displays a list of available languages on LCD 201 (Fig. 1) (S2). In the present example, the following languages are displayed on LCD 201: English, Japanese, French, and German. A certain language is selected therefrom by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S3). Assume that 'French' is selected in S3. CPU 211 then identifes the language table ID corresponding to the language type data in Language Type Data Storage Area 20654b2 (Fig. 1297), and stores the language table ID (Language Table#3) in Selected Language Table ID Storage Area

20654b4 (Fig. 1291) (S4).

[3805] Fig. 1317 illustrates Selected Language Displaying Software 20654c2 stored in Multiple Language Displaying Software Storage Area 20654c (Fig. 1299) which displays and operates with the language selected in S3 of Fig. 1316 (i.e., French). Referring to the present drawing, when Communication Device 200 is powered on (S1), CPU 211 (Fig. 1) of Communication Device 200 retrieves the selected language table ID (Language Table#3) from Selected Language Table ID Storage Area 20654b4 (Fig. 1291) (S2). CPU 211 then identifies the storage area corresponding to the language table ID selected in S2 (Language Table#3 Storage Area 20654b1c (Fig. 1295)) in Language Tables Storage Area 20654b1 (Fig. 1292) (S3). Language text data displaying process is initiated thereafter of which the details are described hereinafter (S4).

[3806] Fig. 1318 illustrates Language Text Data Displaying Software For Word Processor 20654c3a stored in Multiple Language Displaying Software Storage Area 20654c (Fig. 1299) which displays the language text data at the time a word processor, such as MS Word and WordPerfect is executed. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 executes a word processor

in response to the signal input by the user of Communication Device 200 indicating to activate and execute the word processor (S1). In the process of displaying the word processor on LCD 201 (Fig. 1), the following steps of S2 through S8 are implemented. Namely, CPU 211 identifies the language item ID 'Language Item#8' in Language Table#3 Storage Area 20654b1c (Fig. 1295) and displays the corresponding language text data "French#8" indicating 'File' in French at the predetermined location in the word processor (S2). CPU 211 identifies the language item ID 'Language Item#9' in Language Table#3 Storage Area 20654b1c (Fig. 1295) and displays the corresponding language text data "French#9" indicating 'Edit' in French at the predetermined location in the word processor (S3). CPU 211 identifies the language item ID 'Language Item#10' in Language Table#3 Storage Area 20654b1c (Fig. 1295) and displays the corresponding language text data "French#10" indicating 'View' in French at the predetermined location in the word processor (S4). CPU 211 identifies the language item ID 'Language Item#11' in Language Table#3 Storage Area 20654b1c (Fig. 1295) and displays the corresponding language text data "French#11" indicating 'Format' in French at the predeter-

mined location in the word processor (S5). CPU 211 identifies the language item ID 'Language Item#12' in Language Table#3 Storage Area 20654b1c (Fig. 1295) and displays the corresponding language text data "French#12" indicating 'Tools' in French at the predetermined location in the word processor (S6). CPU 211 identifies the language item ID 'Language Item#13' in Language Table#3 Storage Area 20654b1c (Fig. 1295) and displays the corresponding language text data "French#13" indicating 'Window' in French at the predetermined location in the word processor (S7). CPU 211 identifies the language item ID 'Language Item#14' in Language Table#3 Storage Area 20654b1c (Fig. 1295) and displays the corresponding language text data "French#14" indicating 'Help' in French at the predetermined location in the word processor (S8). Alphanumeric data is input to the word processor by utilizing Input Device 210 (Fig. 1) or via voice recognition system thereafter (S9).

[3807] Fig. 1319 illustrates the data displayed on LCD 201 (Fig. 1) of Communication Device 200 at the time Language Text Data Displaying Software For Word Processor 20654c3a (Fig. 1318) is implemented. As described in the

present drawing, the word processor described in Fig. 1318 is primarily composed of Menu Bar 20154MB and Alphanumeric Data Input Area 20154ADIA wherein the language text data described in S2 through S8 of Fig. 1318 are displayed on Menu Bar 20154MB and alphanumeric data are input in Alphanumeric Data Input Area 20154ADIA. In the example described in the present drawing, 20154MBF is the language text data processed in S2 of the previous drawing; 20154MBE is the language text data processed in S3 of the previous drawing; 20154MBV is the language text data processed in S4 of the previous drawing; 20154MBF is the language text data processed in S5 of the previous drawing; 20154MBT is the language text data processed in S6 of the previous drawing; 20154MBW is the language text data processed in S7 of the previous drawing; and 20154MBH is the language text data processed in S8 of the previous drawing.

[3808] Fig. 1320 illustrates Language Text Data Displaying Software For Word Processor 20654c3b stored in Multiple Language Displaying Software Storage Area 20654c (Fig. 1299) which displays a prompt on LCD 201 (Fig. 1) at the time a word processor is closed. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200

intiates the closing process of the word processor in response to the signal input by the user of Communication Device 200 indicating to close the word processor (S1). In the process of closing the word processor, the following steps of S2 through S5 are implemented. Namely, CPU 211 identifies the language item ID 'Language Item#18' in Language Table#3 Storage Area 20654b1c (Fig. 1295) and displays the corresponding language text data "French#18" indicating 'Save' in French at the predetermined location in the word processor (S2). CPU 211 identifies the language item ID 'Language Item#19' in Language Table#3 Storage Area 20654b1c (Fig. 1295) and displays the corresponding language text data "French#19" indicating 'Yes' in French at the predetermined location in the word processor (S3). CPU 211 identifies the language item ID 'Language Item#20' in Language Table#3 Storage Area 20654b1c (Fig. 1295) and displays the corresponding language text data "French#20" indicating 'No' in French at the predetermined location in the word processor (S4). CPU 211 identifies the language item ID 'Language Item#21' in Language Table#3 Storage Area 20654b1c (Fig. 1295) and displays the corresponding language text data

"French#21" indicating 'Cancel' in French at the predetermined location in the word processor (S5). The save signal indicating to save the alphanumeric data input in S9 of Fig. 1318 is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system, assuming that the user of Communication Device 200 intends to save the data (S6), and the data are saved in a predermined location in RAM 206 (Fig. 1) (S7). The word processor is closed thereafter (S8).

[3809] Fig. 1321 illustrates the data displayed on LCD 201 (Fig. 1) of Communication Device 200 at the time Language Text Data Displaying Software For Word Processor 20654c3b (Fig. 1320) is implemented. As described in the present drawing, Prompt 20154Pr is displayed on LCD 201 (Fig. 1) at the time Language Text Data Displaying Software For Word Processor 20654c3a (Fig. 1318) is closed. As described in the present drawing, Prompt 20154Pr is primarily composed of 20154PrS, 20154PrY, 20154PrN, and 20154PrC. In the example described in the present drawing, 20154PrS is the language text data processed in S2 of the previous drawing; 20154PrY is the language text data processed in S3 of the previous drawing; 20154PrN is the language text data processed in S4

of the previous drawing; and 20154PrC is the language text data processed in S5 of the previous drawing.

[3810] Fig. 1322 illustrates Language Text Data Displaying Software For Explorer 20654c4 stored in Multiple Language Displaying Software Storage Area 20654c (Fig. 1299) which displays the language text data at the time a Windows Explorer like software program which displays folders and/or directories and the structures thereof is executed. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 executes Windows Explorer like software program in response to the signal input by the user of Communication Device 200 indicating to activate and execute the software program (S1). In the process of displaying the Windows Explorer like software program on LCD 201 (Fig. 1), the following steps of S2 through S4 are implemented. Namely, CPU 211 identifies the language item ID 'Language Item#15' in Language Table#3 Storage Area 20654b1c (Fig. 1295) and displays the corresponding language text data "French#15" indicating 'My Network' in French at the predetermined location in the Windows Explorer like software program (S2). CPU 211 identifies the language item ID 'Language Item#16' in Language Table#3 Storage Area 20654b1c (Fig. 1295) and

displays the corresponding language text data "French#16" indicating 'Trash' in French at the predetermined location in the Windows Explorer like software program(S3). CPU 211 identifies the language item ID 'Language Item#17' in Language Table#3 Storage Area 20654b1c (Fig. 1295) and displays the corresponding language text data "French#17" indicating 'Local Disk' in French at the predetermined location in the Windows Explorer like software program(S4).

[3811] Fig. 1323 illustrates the data displayed on LCD 201 (Fig. 1) of Communication Device 200 at the time Language Text Data Displaying Software For Explorer 20654c4 (Fig. 1322) is executed. As described in the present drawing, 20154LD, 20154MN, and 20154Tr are displayed on LCD 201 (Fig. 1) at the time Language Text Data Displaying Software For Explorer 20654c4 is executed. As described in the present drawing, 20154LD is the language text data processed in S4 of the previous drawing; 20154MN is the language text data processed in S2 of the previous drawing; and 20154Tr is the language text data processed in S3 of the previous drawing.

[3812] *<<Multiple Language Displaying Function -- Utilizing German>>*

[3813] Fig. 1324 illustrates Language Selecting Software 20654c1

stored in Multiple Language Displaying Software Storage Area 20654c (Fig. 1299) which selects the language utilized to operate Communication Device 200 from a plurality of languages. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the language type data from Language Type Data Storage Area 20654b2 (Fig. 1297) (S1), and Displays a list of available languages on LCD 201 (Fig. 1) (S2). In the present example, the following languages are displayed on LCD 201: English, Japanese, French, and German. A certain language is selected therefrom by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S3). Assume that 'German' is selected in S3. CPU 211 then identifes the language table ID corresponding to the language type data in Language Type Data Storage Area 20654b2 (Fig. 1297), and stores the language table ID (Language Table#4) in Selected Language Table ID Storage Area 20654b4 (Fig. 1291) (S4).

[3814] Fig. 1325 illustrates Selected Language Displaying Software 20654c2 stored in Multiple Language Displaying Software Storage Area 20654c (Fig. 1299) which displays and operates with the language selected in S3 of Fig. 1324 (i.e., German). Referring to the present drawing,

when Communication Device 200 is powered on (S1), CPU 211 (Fig. 1) of Communication Device 200 retrieves the selected language table ID (Language Table#4) from Selected Language Table ID Storage Area 20654b4 (Fig. 1291) (S2). CPU 211 then identifies the storage area corresponding to the language table ID selected in S2 (Language Table#4 Storage Area 20654b1d (Fig. 1296)) in Language Tables Storage Area 20654b1 (Fig. 1292) (S3). Language text data displaying process is initiated thereafter of which the details are described hereinafter (S4).

[3815] Fig. 1326 illustrates Language Text Data Displaying Software For Word Processor 20654c3a stored in Multiple Language Displaying Software Storage Area 20654c (Fig. 1299) which displays the language text data at the time a word processor, such as MS Word and WordPerfect is executed. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 executes a word processor in response to the signal input by the user of Communication Device 200 indicating to activate and execute the word processor (S1). In the process of displaying the word processor on LCD 201 (Fig. 1), the following steps of S2 through S8 are implemented. Namely, CPU 211 identifies the language item ID 'Language Item#8' in Language Ta-

ble#4 Storage Area 20654b1d (Fig. 1296) and displays the corresponding language text data "German#8" indicating 'File' in German at the predetermined location in the word processor (S2). CPU 211 identifies the language item ID 'Language Item#9' in Language Table#4 Storage Area 20654b1d (Fig. 1296) and displays the corresponding language text data "German#9" indicating 'Edit' in German at the predetermined location in the word processor (S3). CPU 211 identifies the language item ID 'Language Item#10' in Language Table#4 Storage Area 20654b1d (Fig. 1296) and displays the corresponding language text data "German#10" indicating 'View' in German at the predetermined location in the word processor (S4). CPU 211 identifies the language item ID 'Language Item#11' in Language Table#4 Storage Area 20654b1d (Fig. 1296) and displays the corresponding language text data "German#11" indicating 'Format' in German at the predetermined location in the word processor (S5). CPU 211 identifies the language item ID 'Language Item#12' in Language Table#4 Storage Area 20654b1d (Fig. 1296) and displays the corresponding language text data "German#12" indicating 'Tools' in German at the predetermined location in the word processor (S6). CPU 211 iden-

tifies the language item ID 'Language Item#13' in Language Table#4 Storage Area 20654b1d (Fig. 1296) and displays the corresponding language text data "German#13" indicating 'Window' in German at the predetermined location in the word processor (S7). CPU 211 identifies the language item ID 'Language Item#14' in Language Table#4 Storage Area 20654b1d (Fig. 1296) and displays the corresponding language text data "German#14" indicating 'Help' in German at the predetermined location in the word processor (S8). Alphanumeric data is input to the word processor by utilizing Input Device 210 (Fig. 1) or via voice recognition system thereafter (S9).

[3816] Fig. 1327 illustrates the data displayed on LCD 201 (Fig. 1) of Communication Device 200 at the time Language Text Data Displaying Software For Word Processor 20654c3a (Fig. 1326) is implemented. As described in the present drawing, the word processor described in Fig. 1326 is primarily composed of Menu Bar 20154MB and Alphanumeric Data Input Area 20154ADIA wherein the language text data described in S2 through S8 of Fig. 1326 are displayed on Menu Bar 20154MB and alphanumeric data are input in Alphanumeric Data Input Area 20154ADIA. In the example described in the present

drawing, 20154MBF is the language text data processed in S2 of the previous drawing; 20154MBE is the language text data processed in S3 of the previous drawing; 20154MBV is the language text data processed in S4 of the previous drawing; 20154MBF is the language text data processed in S5 of the previous drawing; 20154MBT is the language text data processed in S6 of the previous drawing; 20154MBW is the language text data processed in S7 of the previous drawing; and 20154MBH is the language text data processed in S8 of the previous drawing.

[3817] Fig. 1328 illustrates Language Text Data Displaying Software For Word Processor 20654c3b stored in Multiple Language Displaying Software Storage Area 20654c (Fig. 1299) which displays a prompt on LCD 201 (Fig. 1) at the time a word processor is closed. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 intiates the closing process of the word processor in response to the signal input by the user of Communication Device 200 indicating to close the word processor (S1). In the process of closing the word processor, the following steps of S2 through S5 are implemented. Namely, CPU 211 identifies the language item ID 'Language Item#18' in Language Table#4 Storage Area 20654b1d (Fig. 1296) and

displays the corresponding language text data "German#18" indicating 'Save' in German at the predetermined location in the word processor (S2). CPU 211 identifies the language item ID 'Language Item#19' in Language Table#4 Storage Area 20654b1d (Fig. 1296) and displays the corresponding language text data "German#19" indicating 'Yes' in German at the predetermined location in the word processor (S3). CPU 211 identifies the language item ID 'Language Item#20' in Language Table#4 Storage Area 20654b1d (Fig. 1296) and displays the corresponding language text data "German#20" indicating 'No' in German at the predetermined location in the word processor (S4). CPU 211 identifies the language item ID 'Language Item#21' in Language Table#4 Storage Area 20654b1d (Fig. 1296) and displays the corresponding language text data "German#21" indicating 'Cancel' in German at the predetermined location in the word processor (S5). The save signal indicating to save the alphanumeric data input in S9 of Fig. 1326 is input by utilizing Input Device 210 (Fig. 1) or via voice recognition system, assuming that the user of Communication Device 200 intends to save the data (S6), and the data are saved in a predermined location in RAM 206 (Fig. 1) (S7). The word processor is closed

thereafter (S8).

[3818] Fig. 1329 illustrates the data displayed on LCD 201 (Fig. 1) of Communication Device 200 at the time Language Text Data Displaying Software For Word Processor 20654c3b (Fig. 1328) is implemented. As described in the present drawing, Prompt 20154Pr is displayed on LCD 201 (Fig. 1) at the time Language Text Data Displaying Software For Word Processor 20654c3a (Fig. 1326) is closed. As described in the present drawing, Prompt 20154Pr is primarily composed of 20154PrS, 20154PrY, 20154PrN, and 20154PrC. In the example described in the present drawing, 20154PrS is the language text data processed in S2 of the previous drawing; 20154PrY is the language text data processed in S3 of the previous drawing; 20154PrN is the language text data processed in S4 of the previous drawing; and 20154PrC is the language text data processed in S5 of the previous drawing.

[3819] Fig. 1330 illustrates Language Text Data Displaying Software For Explorer 20654c4 stored in Multiple Language Displaying Software Storage Area 20654c (Fig. 1299) which displays the language text data at the time a Windows Explorer like software program which displays folders and/or directories and the structures thereof is exe-

cuted. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 executes Windows Explorer like software program in response to the signal input by the user of Communication Device 200 indicating to activate and execute the software program (S1). In the process of displaying the Windows Explorer like software program on LCD 201 (Fig. 1), the following steps of S2 through S4 are implemented. Namely, CPU 211 identifies the language item ID 'Language Item#15' in Language Table#4 Storage Area 20654b1d (Fig. 1296) and displays the corresponding language text data "German#15" indicating 'My Network' in German at the predetermined location in the Windows Explorer like software program (S2). CPU 211 identifies the language item ID 'Language Item#16' in Language Table#4 Storage Area 20654b1d (Fig. 1296) and displays the corresponding language text data "German#16" indicating 'Trash' in German at the predetermined location in the Windows Explorer like software program(S3). CPU 211 identifies the language item ID 'Language Item#17' in Language Table#4 Storage Area 20654b1d (Fig. 1296) and displays the corresponding language text data "German#17" indicating 'Local Disk' in German at the predetermined location in the Windows Ex-

plorer like software program(S4).

[3820] Fig. 1331 illustrates the data displayed on LCD 201 (Fig. 1) of Communication Device 200 at the time Language Text Data Displaying Software For Explorer 20654c4 (Fig. 1330) is executed. As described in the present drawing, 20154LD, 20154MN, and 20154Tr are displayed on LCD 201 (Fig. 1) at the time Language Text Data Displaying Software For Explorer 20654c4 is executed. As described in the present drawing, 20154LD is the language text data processed in S4 of the previous drawing; 20154MN is the language text data processed in S2 of the previous drawing; and 20154Tr is the language text data processed in S3 of the previous drawing.

[3821] *<<Multiple Language Displaying Function -- Utilizing Other Languages >>*

[3822] For the avoidance of doubt, the present function is not limted to select a language, to operate Communication Device 200, only from the foregoing four lanaguages of English, Japanese, French, and German. The present function is also capable to select a language from Dutch, Chinese, Arabic, Korean, Spanish, Italian, and any other languages existing in this world, in addition to the foregoing four languages.

[3823] *<<Multiple Language Displaying Function -- Summary>>*

[3824] (1) A communication device comprising a microphone, a speaker, a display, an input device and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and a multiple language displaying mode, a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, a language utilized to operate said communication device is selected from a plurality of languages when said multiple language displaying mode is implemented.

[3825] (2) A multiple language displaying software program wherein a language utilized to operate said communication device is selected from a plurality of languages.

[3826] (3) Said plurality of languages in summary (1) or (2) in-

cludes three languages or more.

[3827] (4) Said plurality of languages in summary (1) or (2) includes four languages or more.

[3828] *<<Caller's Information Displaying Function>>*Figs. 1332 through 1375 illustrate the Caller"s Information displaying function which displays the Information regarding the caller (e.g., name, phone number, email address, and home address, etc.) on LCD 201 (Fig. 1) when Communication Device 200 is utilized as a 'TV phone'.

[3829] Figs. 1332 through 1339 illustrate the data and software programs stored in RAM 206 (Fig. 1) of Caller's Device, a Communication Device 200, utilized by the caller.

[3830] Figs. 1340 through 1347 illustrate the data and software programs stored in RAM 206 (Fig. 1) of Callee's Device, a Communication Device 200, utilized by the callee.

[3831] Figs. 1348 through 1351 illustrate the data and software programs stored in Host H (Fig. 429).

[3832] Fig. 1332 illustrates the storage area included in RAM 206 (Fig. 1) of Caller's Device. As described in the present drawing, RAM 206 of Caller's Device includes Caller's Information Displaying Information Storage Area 20655a of which the data and the software programs stored therein are described in Fig. 1333.

[3833] Fig. 1333 illustrates the storage areas included in Caller's Information Displaying Information Storage Area 20655a (Fig. 1332). As described in the present drawing, Caller's Information Displaying Information Storage Area 20655a includes Caller's Information Displaying Data Storage Area 20655b and Caller's Information Displaying Software Storage Area 20655c. Caller's Information Displaying Data Storage Area 20655b stores the data necessary to implement the present function on the side of Caller's Device, such as the ones described in Figs. 1334 through 1338. Caller's Information Displaying Software Storage Area 20655c stores the software programs necessary to implement the present function on the side of Caller's Device, such as the ones described in Fig. 1339.

[3834] Fig. 1334 illustrates the storage areas included in Caller's Information Displaying Data Storage Area 20655b. As described in the present drawing, Caller's Information Displaying Data Storage Area 20655b includes Caller's Audiovisual Data Storage Area 20655b1, Callee's Audiovisual Data Storage Area 20655b2, Caller's Personal Data Storage Area 20655b3, Callee's Personal Data Storage Area 20655b4, Caller's Calculated GPS Data Storage Area 20655b5, Callee's Calculated GPS Data Storage Area

20655b6, Caller's Map Data Storage Area 20655b7, Callee's Map Data Storage Area 20655b8, and Work Area 20655b9. Caller's Audiovisual Data Storage Area 20655b1 stores the data described in Fig. 1335. Callee's Audiovisual Data Storage Area 20655b2 stores the data described in Fig. 1336. Caller's Personal Data Storage Area 20655b3 stores the data described in Fig. 1337. Callee's Personal Data Storage Area 20655b4 stores the data described in Fig. 1338. Caller's Calculated GPS Data Storage Area 20655b5 stores the caller's calculated GPS data which represents the current geographic location of Caller"s Device in (x, y, z) format. Callee's Calculated GPS Data Storage Area 20655b6 stores the callee's calculated GPS data which represents the current geographic location of Callee"s Device in (x, y, z) format. Caller's Map Data Storage Area 20655b7 stores the map data representing the surrounding area of the location indicated by the caller's calculated GPS data. Callee's Map Data Storage Area 20655b8 stores the map data representing the surrounding area of the location indicated by the callee's calculated GPS data. Work Area 20655b9 is a storage area utilized to perform calculation and to temporarily store data.

[3835] Fig. 1335 illustrates the storage areas included in Caller's

Audiovisual Data Storage Area 20655b1 (Fig. 1334). As described in the present drawing, Caller's Audiovisual Data Storage Area 20655b1 includes Caller's Audio Data Storage Area 20655b1a and Caller's Visual Data Storage Area 20655b1b. Caller's Audio Data Storage Area 20655b1a stores the caller's audio data which represents the audio data input via Microphone 215 (Fig. 1) of Caller's Device. Caller's Visual Data Storage Area 20655b1b stores the caller's visual data which represents the visual data input via CCD Unit 214 (Fig. 1) of Caller's Device.

[3836] Fig. 1336 illustrates the storage areas included in Callee's Audiovisual Data Storage Area 20655b2 (Fig. 1334). As described in the present drawing, Callee's Audiovisual Data Storage Area 20655b2 includes Callee's Audio Data Storage Area 20655b2a and Callee's Visual Data Storage Area 20655b2b. Callee's Audio Data Storage Area 20655b2a stores the callee's audio data which represents the audio data sent from Callee's Device. Callee's Visual Data Storage Area 20655b2b stores the callee's visual data which represents the visual data sent from Callee's Device.

[3837] Fig. 1337 illustrates the data stored in Caller's Personal

Data Storage Area 20655b3 (Fig. 1334). As described in the present drawing, Caller's Personal Data Storage Area 20655b3 comprises two columns, i.e., 'Caller's Personal Data' and 'Permitted Caller's Personal Data Flag'. Column 'Caller's Personal Data' stores the caller's personal data which represent the personal data of the caller. Column 'Permitted Caller's Personal Data Flag' stores the permitted caller's personal data flag and each permitted caller's personal data flag represents whether the corresponding caller's personal data is permitted to be displayed on Callee's Device. The permitted caller's personal data flag is represented by either '1' or '0' wherein '1' indicates that the corresponding caller's personal data is permitted to be displayed on Callee's Device, and '0' indicates that the corresponding caller's personal data is not permitted to be displayed on Callee's Device. In the example described in the present drawing, Caller's Personal Data Storage Area 20655b3 stores the following data: the caller"s name and the corresponding permitted caller's personal data flag '1'; the caller"s phone number and the corresponding permitted caller's personal data flag '1'; the caller"s email address and the corresponding permitted caller's personal data flag '1'; the caller"s home address and the corre-

sponding permitted caller's personal data flag '1'; the caller"s business address and the corresponding permitted caller's personal data flag '0'; the caller"s title and the corresponding permitted caller's personal data flag '0'; the caller"s hobby and the corresponding permitted caller's personal data flag '0'; the caller"s blood type and the corresponding permitted caller's personal data flag '0'; the caller"s gender and the corresponding permitted caller's personal data flag '0'; the caller"s age and the corresponding permitted caller's personal data flag '0'; and caller's date of birth and the corresponding permitted caller's personal data flag '0'.

[3838] Fig. 1338 illustrates the data stored in Callee's Personal Data Storage Area 20655b4 (Fig. 1334). As described in the present drawing, Callee's Personal Data Storage Area 20655b4 stores the callee's personal data which represent the personal data of the callee which are displayed on LCD 201 (Fig. 1) of Caller's Device. In the example described in the present drawing, Callee's Personal Data Storage Area 20655b4 stores the callee's name and phone number.

[3839] Fig. 1339 illustrates the software programs stored in Caller's Information Displaying Software Storage Area 20655c (Fig. 1333). As described in the present drawing,

Caller's Information Displaying Software Storage Area 20655c stores Permitted Caller's Personal Data Selecting Software 20655c1, Dialing Software 20655c2, Caller's Device Pin-pointing Software 20655c3, Map Data Sending/Receiving Software 20655c4, Caller's Audiovisual Data Collecting Software 20655c5, Caller's Information Sending/Receiving Software 20655c6, Callee's Information Sending/Receiving Software 20655c6a, Permitted Callee's Personal Data Displaying Software 20655c7, Map Displaying Software 20655c8, Callee's Audio Data Outputting Software 20655c9, and Callee's Visual Data Displaying Software 20655c10. Permitted Caller's Personal Data Selecting Software 20655c1 is the software program described in Fig. 1352. Dialing Software 20655c2 is the software program described in Fig. 1353. Caller's Device Pin-pointing Software 20655c3 is the software program described in Figs. 1354 and 1355. Map Data Sending/Receiving Software 20655c4 is the software program described in Fig. 1356. Caller's Audiovisual Data Collecting Software 20655c5 is the software program described in Fig. 1357. Caller's Information Sending/Receiving Software 20655c6 is the software program described in Fig. 1358. Callee's Information Sending/Receiving Software

20655c6a is the software program described in Fig. 1371. Permitted Callee's Personal Data Displaying Software 20655c7 is the software program described in Fig. 1372. Map Displaying Software 20655c8 is the software program described in Fig. 1373. Callee's Audio Data Outputting Software 20655c9 is the software program described in Fig. 1374. Callee's Visual Data Displaying Software 20655c10 is the software program described in Fig. 1375.

[3840] Fig. 1340 illustrates the storage area included in RAM 206A (Fig. 1) of Callee's Device. As described in the present drawing, RAM 206A of Callee's Device includes Callee"s Information Displaying Information Storage Area 20655aA of which the data and the software programs stored therein are described in Fig. 1341.

[3841] Fig. 1341 illustrates the storage areas included in Callee"s Information Displaying Information Storage Area 20655aA (Fig. 1340). As described in the present drawing, Callee"s Information Displaying Information Storage Area 20655aA includes Callee"s Information Displaying Data Storage Area 20655bA and Callee"s Information Displaying Software Storage Area 20655cA. Callee"s Information Displaying Data Storage Area 20655bA stores the data necessary to implement the present function on the side of Callee's

Device, such as the ones described in Figs. 1342 through 1346. Callee"s Information Displaying Software Storage Area 20655cA stores the software programs necessary to implement the present function on the side of Callee"s Device, such as the ones described in Fig. 1347.

[3842] Fig. 1342 illustrates the storage areas included in Callee"s Information Displaying Data Storage Area 20655bA. As described in the present drawing, Callee"s Information Displaying Data Storage Area 20655bA includes Caller"s Audiovisual Data Storage Area 20655b1A, Callee"s Audio-visual Data Storage Area 20655b2A, Caller"s Personal Data Storage Area 20655b3A, Callee"s Personal Data Storage Area 20655b4A, Caller"s Calculated GPS Data Storage Area 20655b5A, Callee"s Calculated GPS Data Storage Area 20655b6A, Caller"s Map Data Storage Area 20655b7A, Callee"s Map Data Storage Area 20655b8A, and Work Area 20655b9A. Caller"s Audiovisual Data Storage Area 20655b1A stores the data described in Fig. 1343. Callee"s Audiovisual Data Storage Area 20655b2A stores the data described in Fig. 1344. Caller"s Personal Data Storage Area 20655b3A stores the data described in Fig. 1345. Callee"s Personal Data Storage Area 20655b4A stores the data described in Fig. 1346. Caller"s Calculated

GPS Data Storage Area 20655b5A stores the caller's calculated GPS data which represents the current geographic location of Caller"s Device in (x, y, z) format. Callee"s Calculated GPS Data Storage Area 20655b6A stores the callee's calculated GPS data which represents the current geographic location of Callee"s Device in (x, y, z) format. Caller"s Map Data Storage Area 20655b7A stores the map data representing the surrounding area of the location indicated by the caller's calculated GPS data. Callee"s Map Data Storage Area 20655b8A stores the map data representing the surrounding area of the location indicated by the callee's calculated GPS data. Work Area 20655b9A is a storage area utilized to perform calculation and to temporarily store data.

[3843] Fig. 1343 illustrates the storage areas included in Caller"s Audiovisual Data Storage Area 20655b1A (Fig. 1342). As described in the present drawing, Caller"s Audiovisual Data Storage Area 20655b1A includes Caller"s Audio Data Storage Area 20655b1aA and Caller"s Visual Data Storage Area 20655b1bA. Caller"s Audio Data Storage Area 20655b1aA stores the caller's audio data which represents the audio data sent from Caller"s Device in a wireless fashion. Caller"s Visual Data Storage Area 20655b1bA

stores the caller's visual data which represents the visual data input sent from Caller's Device in a wireless fashion.

[3844] Fig. 1344 illustrates the storage areas included in Callee"s Audiovisual Data Storage Area 20655b2A (Fig. 1342). As described in the present drawing, Callee"s Audiovisual Data Storage Area 20655b2A includes Callee"s Audio Data Storage Area 20655b2aA and Callee"s Visual Data Storage Area 20655b2bA. Callee"s Audio Data Storage Area 20655b2aA stores the callee's audio data which represents the audio data input via Microphone 215 (Fig. 1) of Callee's Device. Callee"s Visual Data Storage Area 20655b2bA stores the callee's visual data which represents the visual data input via CCD Unit 214 (Fig. 1) of Callee's Device.

[3845] Fig. 1345 illustrates the data stored in Caller"s Personal Data Storage Area 20655b3A (Fig. 1342). As described in the present drawing, Caller"s Personal Data Storage Area 20655b3A stores the caller's personal data which represent the personal data of the caller which are displayed on LCD 201 (Fig. 1) of Caller's Device. In the example described in the present drawing, Caller"s Personal Data Storage Area 20655b3A stores the caller's name, phone number, email address, and home address.

[3846] Fig. 1346 illustrates the data stored in Callee"s Personal Data Storage Area 20655b4A (Fig. 1342). As described in the present drawing, Callee"s Personal Data Storage Area 20655b4A comprises two columns, i.e., 'Callee's Personal Data' and 'Permitted Callee's Personal Data Flag'. Column 'Callee's Personal Data' stores the callee's personal data which represent the personal data of the callee. Column 'Permitted Callee's Personal Data Flag' stores the permitted callee's personal data flag and each permitted callee's personal data flag represents whether the corresponding callee's personal data is permitted to be displayed on Caller's Device. The permitted callee's personal data flag is represented by either '1' or '0' wherein '1' indicates that the corresponding callee's personal data is permitted to be displayed on Caller's Device, and '0' indicates that the corresponding callee's personal data is not permitted to be displayed on Caller's Device. In the example described in the present drawing, Callee's Personal Data Storage Area 20655b4A stores the following data: callee's name and the corresponding permitted callee's personal data flag '1'; the callee"s phone number and the corresponding permitted callee's personal data flag '1'; the callee"s email address and the corresponding permitted caller's personal

data flag '0'; the callee"s home address and the corresponding permitted callee's personal data flag '0'; the callee"s business address and the corresponding permitted callee's personal data flag '0'; the callee"s title and the corresponding permitted callee's personal data flag '0'; the callee"s hobby and the corresponding permitted callee's personal data flag '0'; the callee"s blood type and the corresponding permitted callee's personal data flag '0'; the callee"s gender and the corresponding permitted callee's personal data flag '0'; the callee"s age and the corresponding permitted callee's personal data flag '0'; and callee's date of birth and the corresponding permitted callee's personal data flag '0'.

[3847] Fig. 1347 illustrates the software programs stored in Callee"s Information Displaying Software Storage Area 20655cA (Fig. 1341). As described in the present drawing, Callee"s Information Displaying Software Storage Area 20655cA stores Permitted Callee"s Personal Data Selecting Software 20655c1A, Dialing Software 20655c2A, Callee"s Device Pin-pointing Software 20655c3A, Map Data Sending/Receiving Software 20655c4A, Callee"s Audiovisual Data Collecting Software 20655c5A, Callee"s Information Sending/Receiving Software 20655c6A, Caller"s Informa-

tion Sending/Receiving Software 20655c6aA, Permitted Caller"s Personal Data Displaying Software 20655c7A, Map Displaying Software 20655c8A, Caller"s Audio Data Outputting Software 20655c9A, and Caller"s Visual Data Displaying Software 20655c10A. Permitted Callee"s Personal Data Selecting Software 20655c1A is the software program described in Fig. 1364. Dialing Software 20655c2A is the software program described in Fig. 1365. Callee"s Device Pin-pointing Software 20655c3A is the software program described in Figs. 1366 and 1367. Map Data Sending/Receiving Software 20655c4A is the software program described in Fig. 1368. Callee"s Audiovisual Data Collecting Software 20655c5A is the software program described in Fig. 1369. Callee"s Information Sending/Receiving Software 20655c6A is the software program described in Fig. 1370. Caller"s Information Sending/Receiving Software 20655c6aA is the software program described in Fig. 1359. Permitted Caller"s Personal Data Displaying Software 20655c7A is the software program described in Fig. 1360. Map Displaying Software 20655c8A is the software program described in Fig. 1361. Caller"s Audio Data Outputting Software 20655c9A is the software program described in Fig. 1362. Caller"s Visual Data Dis-

playing Software 20655c10A is the software program described in Fig. 1363.

[3848] Fig. 1348 illustrates the storage area included in Host H (Fig. 429). As described in the present drawing, Host H includes Caller/Callee Information Storage Area H55a of which the data and the software programs stored therein are described in Fig.1349.

[3849] Fig. 1349 illustrates the storage areas included in Caller/Callee Information Storage Area H55a. As described in the present drawing, Caller/Callee Information Storage Area H55a includes Caller/Callee Data Storage Area H55b and Caller/Callee Software Storage Area H55c. Caller/Callee Data Storage Area H55b stores the data necessary to implement the present function on the side of Host H (Fig. 429), such as the ones described in Fig. 1350. Caller/Callee Software Storage Area H55c stores the software programs necessary to implement the present function on the side of Host H, such as the ones described in Fig. 1351.

[3850] Fig. 1350 illustrates the storage areas included in Caller/Callee Data Storage Area H55b. As described in the present drawing, Caller/Callee Data Storage Area H55b includes Caller's Information Storage Area H55b1, Callee's

Information Storage Area H55b2, Map Data Storage Area H55b3, Work Area h55b4, Caller's Calculated GPS Data Storage Area H55b5, and Callee's Calculated GPS Data Storage Area H55b6. Caller's Information Storage Area H55b1 stores the Caller"s Information received Caller's Device. Callee's Information Storage Area H55b2 stores the Callee"s Information received Callee's Device. Map Data Storage Area H55b3 stores the map data received from Caller's Device and Callee's Device. Work Area H55b4 is a storage area utilized to perform calculation and to temporarily store data. Caller's Calculated GPS Data Storage Area H55b5 stores the caller's calculated GPS data. Callee's Calculated GPS Data Storage Area H55b6 stores the callee's calculated GPS data.

[3851] Fig. 1351 illustrates the software programs stored in Caller/Callee Software Storage Area H55c (Fig. 1351). As described in the present drawing, Caller/Callee Software Storage Area H55c stores Dialing Software H55c2, Caller's Device Pin-pointing Software H55c3, Callee's Device Pin-pointing Software H55c3a, Map Data Sending/Receiving Software H55c4, Caller's Information Sending/Receiving Software H55c6, and Callee's Information Sending/Receiving Software H55c6a. Dialing Software H55c2 is the

software program described in Figs. 1353 and 1365. Caller's Device Pin-pointing Software H55c3 is the software program described in Fig. 1354. Callee's Device Pin-pointing Software H55c3a is the software program described in Fig. 1366. Map Data Sending/Receiving Software H55c4 is the software program described in Fig. 1356 and 1368. Caller's Information Sending/Receiving Software H55c6 is the software program described in Fig. 1358. Callee's Information Sending/Receiving Software H55c6a is the software program described in Fig. 1370 and 1371.

[3852] Figs. 1352 through 1363 primarily illustrate the sequence to output the Caller"s Information (which is defined hereinafter) from Callee's Device.

[3853] Fig. 1352 illustrates Permitted Caller's Personal Data Selecting Software 20655c1 stored in Caller's Information Displaying Software Storage Area 20655c (Fig. 1339) of Caller's Device, which selects the permitted caller's personal data to be displayed on LCD 201 (Fig. 1) of Callee's Device. Referring to the present drawing, CPU 211 (Fig. 1) of Caller's Device retrieves all of the caller's personal data from Caller's Personal Data Storage Area 20655b3 (Fig. 1337) (S1). CPU 211 then displays a list of caller's per-

sonal data on LCD 201 (Fig. 1) (S2). The caller selects, by utilizing Input Device 210 (Fig. 1) or via voice recognition system, the caller's personal data permitted to be displayed on Callee's Device (S3). The permitted caller's personal data flag of the data selected in S3 is registered as '1' (S4).

[3854] Fig. 1353 illustrates Dialing Software H55c2 stored in Caller/Callee Software Storage Area H55c (Fig. 1351) of Host H (Fig. 429), Dialing Software 20655c2 stored in Caller's Information Displaying Software Storage Area 20655c (Fig. 1339) of Caller's Device, and Dialing Software 20655c2A stored in Callee's Information Displaying Software Storage Area 20655cA (Fig. 1347) of Callee's Device, which enables to connect between Caller's Device and Callee's Device via Host H (Fig. 429) in a wireless fashion. Referring to the present drawing, a connection is established between Caller's Device and Host H (S1). Next, a connection is established between Host H and Callee's Device (S2). As a result, Caller's Device and Callee's Device are able to exchange audiovisual data, text data, and various types of data with each other. The connection is maintained until Caller"s Device, Host H, or Callee"s Device terminates the connection.

[3855] Fig. 1354 illustrates Caller's Device Pin-pointing Software H55c3 (Fig. 1351) stored in Caller/Callee Software Storage Area H55c (Fig. 1351) of Host H (Fig. 429) and Caller's Device Pin-pointing Software 20655c3 stored in Caller's Information Displaying Software Storage Area 20655c (Fig. 1339) of Caller's Device, which identifies the current geographic location of Caller's Device. Referring to the present drawing, CPU 211 (Fig. 1) of Caller's Device collects the GPS raw data from the near base stations (S1). CPU 211 sends the raw GPS data to Host H (S2). Upon receiving the raw GPS data (S3), Host H produces the caller"s calculated GPS data by referring to the raw GPS data (S4). Host H stores the caller"s calculated GPS data in Caller's Calculated GPS Data Storage Area H55b5 (Fig. 1350) (S5). Host H then retrieves the caller"s calculated GPS data from Caller's Calculated GPS Data Storage Area H55b5 (Fig. 1350) (S6), and sends the data to Caller's Device (S7). Upon receiving the caller"s calculated GPS data from Host H (S8), CPU 211 stores the data in Caller's Calculated GPS Data Storage Area 20655b5 (Fig. 1334) (S9). Here, the GPS raw data are the primitive data utilized to produce the caller"s calculated GPS data, and the caller"s calculated GPS data is the data representing the location of Caller"s

Device in (x, y, z) format. The sequence described in the present drawing is repeated periodically.

[3856] Fig. 1355 illustrates another embodiment of the sequence described in Fig. 1354 in which the entire process is performed solely by Caller's Device Pin-pointing Software 20655c3 stored in Caller's Information Displaying Software Storage Area 20655c (Fig. 1339) of Caller's Device. Referring to the present drawing, CPU 211 (Fig. 1) of Caller's Device collects the raw GPS data from the near base stations (S1). CPU 211 then produces the caller"s calculated GPS data by referring to the raw GPS data (S2), and stores the caller"s calculated GPS data in Caller's Calculated GPS Data Storage Area 20655b5 (Fig. 1334) (S3). The sequence described in the present drawing is repeated periodically.

[3857] Fig. 1356 illustrates Map Data Sending/Receiving Software H55c4 stored in Caller/Callee Software Storage Area H55c (Fig. 1351) of Host H (Fig. 429) and Map Data Sending/Receiving Software 20655c4 stored in Caller's Information Displaying Software Storage Area 20655c (Fig. 1339) of Caller's Device, which sends and receives the map data. Referring to the present drawing, CPU 211 (Fig. 1) of Caller's Device retrieves the caller"s calculated GPS data

from Caller's Calculated GPS Data Storage Area 20655b5 (Fig. 1334) (S1), and sends the data to Host H (S2). Upon receiving the calculated GPS data from Caller's Device (S3), Host H identifies the map data in Map Data Storage Area H55b3 (Fig. 1350) (S4). Here, the map data represents the surrounding area of the location indicated by the caller's calculated GPS data. Host H retrieves the map data from Map Data Storage Area H55b3 (Fig. 1350) (S5), and sends the data to Caller's Device (S6). Upon receiving the map data from Host H (S7), Caller's Device stores the data in Caller's Map Data Storage Area 20655b7 (Fig. 1334) (S8). The sequence described in the present drawing is repeated periodically.

[3858] Fig. 1357 illustrates Caller's Audiovisual Data Collecting Software 20655c5 stored in Caller's Information Displaying Software Storage Area 20655c (Fig. 1339) of Caller's Device, which collects the audiovisual data of the caller to be sent to Callee's Device via Antenna 218 (Fig. 1) thereof. CPU 211 (Fig. 1) of Caller's Device retrieves the caller's audiovisual data from CCD Unit 214 and Microphone 215 (S1). CPU 211 then stores the caller's audio data in Caller's Audio Data Storage Area 20655b1a (Fig. 1335) (S2), and the caller's visual data in Caller's Visual Data Storage Area

20655b1b (Fig. 1335) (S3). The sequence described in the present drawing is repeated periodically.

[3859] Fig. 1358 illustrates Caller's Information Sending/Receiving Software H55c6 stored in Caller/Callee Software Storage Area H55c (Fig. 1351) of Host H (Fig. 429) and Caller's Information Sending/Receiving Software 20655c6 stored in Caller's Information Displaying Software Storage Area 20655c (Fig. 1339) of Caller's Device, which sends and receives the Caller"s Information (which is defined hereinafter) between Caller's Device and Host H. Referring to the present drawing, CPU 211 (Fig. 1) of Caller's Device retrieves the permitted caller's personal data from Caller's Personal Data Storage Area 20655b3 (Fig. 1337) (S1). CPU 211 retrieves the caller"s calculated GPS data from Caller's Calculated GPS Data Storage Area 20655b5 (Fig. 1334) (S2). CPU 211 retrieves the map data from Caller's Map Data Storage Area 20655b7 (Fig. 1334) (S3). CPU 211 retrieves the caller's audio data from Caller's Audio Data Storage Area 20655b1a (Fig. 1335) (S4). CPU 211 retrieves the caller's visual data from Caller's Visual Data Storage Area 20655b1b (Fig. 1335) (S5). CPU 211 then sends the data retrieved in S1 through S5 (collectively defined as the 'Caller's Information' hereinafter) to Host H (S6). Upon re-

ceiving the Caller"s Information from Caller's Device (S7), Host H stores the Caller"s Information in Caller's Information Storage Area H55b1 (Fig. 1350) (S8). The sequence described in the present drawing is repeated periodically.

[3860] Fig. 1359 illustrates Caller's Information Sending/Receiving Software H55c6 stored in Caller/Callee Software Storage Area H55c (Fig. 1351) of Host H (Fig. 429) and Caller's Information Sending/Receiving Software 20655c6aA (Fig. 1347) stored in Caller's Information Displaying Software Storage Area 20655c (Fig. 1339) of Caller's Device, which sends and receives the Caller"s Information between Host H and Callee's Device. Referring to the present drawing, Host H retrieves the Caller"s Information from Caller's Information Storage Area H55b1 (Fig. 1350) (S1), and sends the Caller"s Information to Callee's Device (S2). CPU 211 (Fig. 1) of Callee's Device receives the Caller"s Information from Host H (S3). CPU 211 stores the permitted caller's personal data in Caller's Personal Data Storage Area 20655b3A (Fig. 1345) (S4). CPU 211 stores the caller"s calculated GPS data in Caller's Calculated GPS Data Storage Area 20655b5A (Fig. 1342) (S5). CPU 211 stores the map data in Caller's Map Data Storage Area 20655b7A (Fig. 1342) (S6). CPU 211 stores the

caller's audio data in Caller's Audio Data Storage Area 20655b1aA (Fig. 1343) (S7). CPU 211 stores the caller's visual data in Caller's Visual Data Storage Area 20655b1bA (Fig. 1343) (S8). The sequence described in the present drawing is repeated periodically.

[3861] Fig. 1360 illustrates Permitted Caller's Personal Data Displaying Software 20655c7A stored in Callee's Information Displaying Software Storage Area 20655cA (Fig. 1347) of Callee's Device, which displays the permitted caller's personal data on LCD 201 (Fig. 1) of Callee's Device. Referring to the present drawing, CPU 211 (Fig. 1) of Callee's Device retrieves the permitted caller's personal data from Caller's Personal Data Storage Area 20655b3A (Fig. 1345) (S1). CPU 211 then displays the permitted caller's personal data on LCD 201 (Fig. 1) (S2). The sequence described in the present drawing is repeated periodically.

[3862] Fig. 1361 illustrates Map Displaying Software 20655c8A stored in Callee's Information Displaying Software Storage Area 20655cA (Fig. 1347) of Callee's Device, which displays the map representing the surrounding area of the location indicated by the caller's calculated GPS data. Referring to the present drawing, CPU 211 (Fig. 1) of Callee's Device retrieves the caller"s calculated GPS data from

Caller's Calculated GPS Data Storage Area 20655b5A (Fig. 1342) (S1). CPU 211 then retrieves the map data from Caller's Map Data Storage Area 20655b7A (Fig. 1342) (S2), and arranges on the map data the caller's current location icon in accordance with the caller"s calculated GPS data (S3). Here, the caller's current location icon is an icon which represents the location of Caller's Device in the map data. The map with the caller's current location icon is displayed on LCD 201 (Fig. 1) (S4). The sequence described in the present drawing is repeated periodically.

[3863] Fig. 1362 illustrates Caller's Audio Data Outputting Software 20655c9A stored in Caller's Information Displaying Software Storage Area 20655c (Fig. 1339) of Caller's Device, which outputs the caller's audio data from Speaker 216 (Fig. 1) of Callee's Device. Referring to the present drawing, CPU 211 (Fig. 1) of Callee's Device retrieves the caller's audio data from Caller's Audio Data Storage Area 20655b1aA (Fig. 1343) (S1). CPU 211 then outputs the caller's audio data from Speaker 216 (Fig. 1) (S2). The sequence described in the present drawing is repeated periodically.

[3864] Fig. 1363 illustrates Caller's Visual Data Displaying Software 20655c10A stored in Callee's Information Displaying

Software Storage Area 20655cA (Fig. 1347) of Callee's Device, which displays the caller's visual data on LCD 201 (Fig. 1) of Callee's Device. Referring to the present drawing, CPU 211 (Fig. 1) of Callee's Device retrieves the caller's visual data from Caller's Visual Data Storage Area 20655b1bA (Fig. 1343) (S1). CPU 211 then displays the caller's visual data on LCD 201 (Fig. 1) (S2). The sequence described in the present drawing is repeated periodically.

[3865] Figs. 1364 through 1375 primarily illustrate the sequence to output the Callee"s Information (which is defined hereinafter) from Caller's Device.

[3866] Fig. 1364 illustrates Permitted Callee's Personal Data Selecting Software 20655c1A stored in Callee's Information Displaying Software Storage Area 20655cA (Fig. 1347) of Callee's Device, which selects the permitted callee's personal data to be displayed on LCD 201 (Fig. 1) of Caller's Device. Referring to the present drawing, CPU 211 (Fig. 1) of Callee's Device retrieves all of the callee's personal data from Callee's Personal Data Storage Area 20655b4A (Fig. 1346) (S1). CPU 211 then displays a list of callee's personal data on LCD 201 (Fig. 1) (S2). The callee selects, by utilizing Input Device 210 (Fig. 1) or via voice recognition system, the callee's personal data permitted to be dis-

played on Caller's Device (S3). The permitted callee's personal data flag of the data selected in S3 is registered as '1' (S4).

[3867] Fig. 1365 illustrates Dialing Software H55c2 stored in Caller/Callee Software Storage Area H55c (Fig. 1351) of Host H (Fig. 429), Dialing Software 20655c2A stored in Callee's Information Displaying Software Storage Area 20655cA (Fig. 1347) of Callee's Device, and Dialing Software 20655c2 stored in Caller's Information Displaying Software Storage Area 20655c (Fig. 1339) of Caller's Device, which enables to connect between Callee's Device and Caller's Device via Host H (Fig. 429) in a wireless fashion. Referring to the present drawing, a connection is established between Callee's Device and Host H (S1). Next, a connection is established between Host H and Caller's Device (S2). As a result, Callee's Device and Caller's Device are able to exchange audiovisual data, text data, and various types of data with each other. The sequence described in the present drawing is not necessarily implemented if the connection between Caller"s Device and Callee"s Device is established as described in Fig. 1353. The sequence described in the present drawing may be implemented if the connection is accidentally terminated

by Callee"s Device and the connection process is initiated by Callee"s Device.

[3868] Fig. 1366 illustrates Callee's Device Pin-pointing Software H55c3a stored in Caller/Callee Software Storage Area H55c (Fig. 1351) of Host H (Fig. 429) and Callee's Device Pin-pointing Software 20655c3A stored in Callee's Information Displaying Software Storage Area 20655cA of Callee's Device, which identifies the current geographic location of Callee's Device. Referring to the present drawing, CPU 211 (Fig. 1) of Callee's Device collects the GPS raw data from the near base stations (S1). CPU 211 sends the raw GPS data to Host H (S2). Upon receiving the raw GPS data (S3), Host H produces the callee"s calculated GPS data by referring to the raw GPS data (S4). Host H stores the callee"s calculated GPS data in Callee's Calculated GPS Data Storage Area H55b6 (Fig. 1350) (S5). Host H then retrieves the callee"s calculated GPS data from Callee's Calculated GPS Data Storage Area H55b6 (Fig. 1350) (S6), and sends the data to Callee's Device (S7). Upon receiving the callee"s calculated GPS data from Host H (S8), CPU 211 stores the data in Callee's Calculated GPS Data Storage Area 20655b6A (Fig. 1342) (S9). Here, the GPS raw data are the primitive data utilized to produce the callee"s cal-

culated GPS data, and the callee"s calculated GPS data is the data representing the location of Callee"s Device in (x, y, z) format. The sequence described in the present drawing is repeated periodically.

[3869] Fig. 1367 illustrates another embodiment of the sequence described in Fig. 1366 in which the entire process is performed solely by Callee's Device Pin-pointing Software 20655c3A stored in Callee's Information Displaying Software Storage Area 20655cA (Fig. 1347) of Callee's Device. Referring to the present drawing, CPU 211 (Fig. 1) of Callee's Device collects the raw GPS data from the near base stations (S1). CPU 211 then produces the callee"s calculated GPS data by referring to the raw GPS data (S2), and stores the callee"s calculated GPS data in Callee's Calculated GPS Data Storage Area 20655b6A (Fig. 1342) (S3). The sequence described in the present drawing is repeated periodically.

[3870] Fig. 1368 illustrates Map Data Sending/Receiving Software H55c4 stored in Caller/Callee Software Storage Area H55c (Fig. 1351) of Host H (Fig. 429) and Map Data Sending/Receiving Software 20655c4A stored in Callee's Information Displaying Software Storage Area 20655cA (Fig. 1347) of Callee's Device, which sends and receives the

map data. Referring to the present drawing, CPU 211 (Fig. 1) of Callee's Device retrieves the callee"s calculated GPS data from Callee's Calculated GPS Data Storage Area 20655b6A (Fig. 1342) (S1), and sends the data to Host H (S2). Upon receiving the calculated GPS data from Callee's Device (S3), Host H identifies the map data in Map Data Storage Area H55b3 (Fig. 1350) (S4). Here, the map data represents the surrounding area of the location indicated by the callee's calculated GPS data. Host H retrieves the map data from Map Data Storage Area H55b3 (Fig. 1350) (S5), and sends the data to Callee's Device (S6). Upon receiving the map data from Host H (S7), Callee's Device stores the data in Callee's Map Data Storage Area 20655b8A (Fig. 1342) (S8). The sequence described in the present drawing is repeated periodically.

[3871] Fig. 1369 illustrates Callee's Audiovisual Data Collecting Software 20655c5A stored in Callee's Information Displaying Software Storage Area 20655cA (Fig. 1347) of Callee's Device, which collects the audiovisual data of the callee to be sent to Caller's Device via Antenna 218 (Fig. 1) thereof. CPU 211 (Fig. 1) of Callee's Device retrieves the callee's audiovisual data from CCD Unit 214 and Microphone 215 (S1). CPU 211 then stores the callee's audio

data in Callee's Audio Data Storage Area 20655b2aA (Fig. 1344) (S2), and the callee's visual data in Callee's Visual Data Storage Area 20655b2bA (Fig. 1344) (S3). The sequence described in the present drawing is repeated periodically.

[3872] Fig. 1370 illustrates Callee's Information Sending/Receiving Software H55c6a (Fig. 1351) stored in Caller/Callee Software Storage Area H55c (Fig. 1351) of Host H (Fig. 429) and Callee's Information Sending/Receiving Software 20655c6A (Fig. 1347) stored in Callee's Information Displaying Software Storage Area 20655cA of Callee's Device, which sends and receives the Callee"s Information (which is defined hereinafter) between Callee's Device and Host H. Referring to the present drawing, CPU 211 (Fig. 1) of Callee's Device retrieves the permitted callee's personal data from Callee's Personal Data Storage Area 20655b4A (Fig. 1346) (S1). CPU 211 retrieves the callee"s calculated GPS data from Callee's Calculated GPS Data Storage Area 20655b6A (Fig. 1342) (S2). CPU 211 retrieves the map data from Callee's Map Data Storage Area 20655b8A (Fig. 1342) (S3). CPU 211 retrieves the callee's audio data from Callee's Audio Data Storage Area 20655b2aA (Fig. 1344) (S4). CPU 211 retrieves the callee's visual data from

Callee's Visual Data Storage Area 20655b2bA (Fig. 1344) (S5). CPU 211 then sends the data retrieved in S1 through S5 (collectively defined as the 'Callee's Information' hereinafter) to Host H (S6). Upon receiving the Callee"s Information from Callee's Device (S7), Host H stores the Callee"s Information in Callee's Information Storage Area H55b2 (Fig. 1350) (S8). The sequence described in the present drawing is repeated periodically.

[3873] Fig. 1371 illustrates Callee's Information Sending/Receiving Software H55c6a stored in Caller/Callee Software Storage Area H55c (Fig. 1351) of Host H (Fig. 429) and Callee's Information Sending/Receiving Software 20655c6a stored in Caller's Information Displaying Software Storage Area 20655c (Fig. 1339) of Caller's Device, which sends and receives the Callee"s Information between Host H and Caller's Device. Referring to the present drawing, Host H retrieves the Callee"s Information from Callee's Information Storage Area H55b2 (Fig. 1350) (S1), and sends the Callee"s Information to Caller's Device (S2). CPU 211 (Fig. 1) of Caller's Device receives the Callee"s Information from Host H (S3). CPU 211 stores the permitted callee's personal data in Callee's Personal Data Storage Area 20655b4 (Fig. 1338) (S4). CPU 211 stores the

callee"s calculated GPS data in Callee's Calculated GPS Data Storage Area 20655b6 (Fig. 1334) (S5). CPU 211 stores the map data in Callee's Map Data Storage Area 20655b8 (Fig. 1334) (S6). CPU 211 stores the callee's audio data in Callee's Audio Data Storage Area 20655b2a (Fig. 1336) (S7). CPU 211 stores the callee's visual data in Callee's Visual Data Storage Area 20655b2b (Fig. 1336) (S8). The sequence described in the present drawing is repeated periodically.

[3874] Fig. 1372 illustrates Permitted Callee's Personal Data Displaying Software 20655c7 stored in Caller's Information Displaying Software Storage Area 20655c (Fig. 1339) of Caller's Device, which displays the permitted callee's personal data on LCD 201 (Fig. 1) of Caller's Device. Referring to the present drawing, CPU 211 (Fig. 1) of Caller's Device retrieves the permitted callee's personal data from Callee's Personal Data Storage Area 20655b4 (Fig. 1338) (S1). CPU 211 then displays the permitted callee's personal data on LCD 201 (Fig. 1) (S2). The sequence described in the present drawing is repeated periodically.

[3875] Fig. 1373 illustrates Map Displaying Software 20655c8 stored in Caller's Information Displaying Software Storage Area 20655c (Fig. 1339) of Caller's Device, which displays

the map representing the surrounding area of the location indicated by the callee's calculated GPS data. Referring to the present drawing, CPU 211 (Fig. 1) of Caller's Device retrieves the callee"s calculated GPS data from Callee's Calculated GPS Data Storage Area 20655b6 (Fig. 1334) (S1). CPU 211 then retrieves the map data from Callee's Map Data Storage Area 20655b8 (Fig. 1334) (S2), and arranges on the map data the callee's current location icon in accordance with the callee"s calculated GPS data (S3). Here, the callee's current location icon is an icon which represents the location of Callee's Device in the map data. The map with the callee's current location icon is displayed on LCD 201 (Fig. 1) (S4). The sequence described in the present drawing is repeated periodically.

[3876] Fig. 1374 illustrates Callee's Audio Data Outputting Software 20655c9 stored in Caller's Information Displaying Software Storage Area 20655c (Fig. 1339) of Caller's Device, which outputs the callee's audio data from Speaker 216 (Fig. 1) of Caller's Device. Referring to the present drawing, CPU 211 (Fig. 1) of Caller's Device retrieves the callee's audio data from Callee's Audio Data Storage Area 20655b2a (Fig. 1336) (S1). CPU 211 then outputs the caller's audio data from Speaker 216 (Fig. 1) (S2). The se-

quence described in the present drawing is repeated periodically.

[3877] Fig. 1375 illustrates Callee's Visual Data Displaying Software 20655c10 stored in Caller's Information Displaying Software Storage Area 20655c (Fig. 1339) of Caller's Device, which displays the callee's visual data on LCD 201 (Fig. 1) of Caller's Device. Referring to the present drawing, CPU 211 (Fig. 1) of Caller's Device retrieves the callee's visual data from Callee's Visual Data Storage Area 20655b2b (Fig. 1336) (S1). CPU 211 then displays the callee's visual data on LCD 201 (Fig. 1) (S2). The sequence described in the present drawing is repeated periodically.

[3878] *<<Caller's Information Displaying Function -- Summary>>*(1) A communication device comprising a microphone, a speaker, a display, an input device and a multiple mode implementer, wherein said multiple mode implementer implements a voice communication mode and a caller"s information displaying mode, a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, a series of visual data and a set of personal data of the opponent party are displayed on said display when caller"s information displaying mode is im-

plemented.

[3879] (2) A caller"s information displaying software program wherein a series of visual data and a set of personal data of the opponent party are displayed on a display of a communication device, and a series of audio data of the opponent party are output from a speaker of said communication device under the control of said caller"s information displaying software program.

[3880] (3) A host computer storing a caller"s information displaying software program wherein a series of visual data and a set of personal data of the opponent party are displayed on a display of a communication device, and a series of audio data of the opponent party are output from a speaker of said communication device under the control of said caller"s information displaying software program.

[3881] *<<Communication Device Remote Controlling Function (By Phone)>>*

[3882] Figs. 1394 through 1415 illustrate the communication device remote controlling function (by phone) which enables the user of Communication Device 200 to remotely control Communication Device 200 via conventional telephone Phone PH (not shown in the drawings).

[3883] Fig. 1394 illustrates the storage areas included in Host H

(Fig. 429). As described in the present drawing, Host H includes Communication Device Controlling Information Storage Area H57a of which the data and the software programs stored therein are described in Fig. 1395.

[3884] Fig. 1395 illustrates the storage areas included in Communication Device Controlling Information Storage Area H57a (Fig. 1394). As described in the present drawing, Communication Device Controlling Information Storage Area H57a includes Communication Device Controlling Data Storage Area H57b and Communication Device Controlling Software Storage Area H57c. Communication Device Controlling Data Storage Area H57b stores the data necessary to implement the present function on the side of Host H (Fig. 429), such as the ones described in Figs. 1396 through 1399. Communication Device Controlling Software Storage Area H57c stores the software programs necessary to implement the present function on the side of Host H, such as the ones described in Fig. 1400.

[3885] Fig. 1396 illustrates the storage areas included in Communication Device Controlling Data Storage Area H57b (Fig. 1395). As described in the present drawing, Communication Device Controlling Data Storage Area H57b includes Password Data Storage Area H57b1, Phone Number

Data Storage Area H57b2, Audio Data Storage Area H57b3, and Work Area H57b4. Password Data Storage Area H57b1 stores the data described in Fig. 1397. Phone Number Data Storage Area H57b2 stores the data described in Fig. 1398. Audio Data Storage Area H57b3 stores the data described in Fig. 1399. Work Area H57b4 is utilized as a work area to perform calculation and to temporarily store data.

[3886] Fig. 1397 illustrates the data stored in Password Data Storage Area H57b1 (Fig. 1396). As described in the present drawing, Password Data Storage Area H57b1 comprises two columns, i.e., 'User ID' and 'Password Data'. Column 'User ID' stores the user IDs, and each user ID represents the identification of the user of Communication Device 200. Column 'Password Data' stores the password data, and each password data represents the password set by the user of the corresponding user ID. Here, each password data is composed of alphanumeric data. In the example described in the present drawing, Password Data Storage Area H57b1 stores the following data: the user ID 'User#1' and the corresponding password data 'Password Data#1'; the user ID 'User#2' and the corresponding password data 'Password Data#2'; the user ID

'User#3' and the corresponding password data 'Password Data#3'; the user ID 'User#4' and the corresponding password data 'Password Data#4'; and the user ID 'User#5' and the corresponding password data 'Password Data#5'.

[3887] Fig. 1398 illustrates the data stored in Phone Number Data Storage Area H57b2 (Fig. 1396). As described in the present drawing, Phone Number Data Storage Area H57b2 comprises two columns, i.e., 'User ID' and 'Phone Number Data'. Column 'User ID' stores the user IDs, and each user ID represents the identification of the user of Communication Device 200. Column 'Phone Number Data' stores the phone number data, and each phone number data represents the phone number of the user of the corresponding user ID. Here, each phone number data is composed of numeric data. In the example described in the present drawing, Phone Number Data Storage Area H57b2 stores the following data: the user ID 'User#1' and the corresponding phone number data 'Phone Number Data#1'; the user ID 'User#2' and the corresponding phone number data 'Phone Number Data#2'; the user ID 'User#3' and the corresponding phone number data 'Phone Number Data#3'; the user ID 'User#4' and the corresponding phone number data 'Phone Number Data#4';

and the user ID 'User#5' and the corresponding phone number data 'Phone Number Data#5'.

[3888] Fig. 1399 illustrates the data stored in Audio Data Storage Area H57b3 (Fig. 1396). As described in the present drawing, Audio Data Storage Area H57b3 comprises two columns, i.e., 'Audio ID' and 'Audio Data'. Column 'Audio ID' stores the audio IDs, and each audio ID represents the identification of the audio data stored in column 'Audio Data'. Column 'Audio Data' stores the audio data, and each audio data represents a message output from a conventional telephone Phone PH. In the example described in the present drawing, Audio Data Storage Area H57b3 stores the following data: the audio ID 'Audio#0' and the corresponding audio data 'Audio Data#0'; the audio ID 'Audio#1' and the corresponding audio data 'Audio Data#1'; the audio ID 'Audio#2' and the corresponding audio data 'Audio Data#2'; the audio ID 'Audio#3' and the corresponding audio data 'Audio Data#3'; the audio ID 'Audio#4' and the corresponding audio data 'Audio Data#4'; the audio ID 'Audio#5' and the corresponding audio data 'Audio Data#5'; and the audio ID 'Audio#6' and the corresponding audio data 'Audio Data#6'. 'Audio Data#0' represents the message: 'To deactivate manner

mode, press 1. To deactivate manner mode and ring your mobile phone, press 2. To ring your mobile phone, press 3. To change password of your mobile phone, press 4. To lock your mobile phone, press 5. To power off your mobile phone, press 6.' 'Audio Data#1' represents the message: 'The manner mode has been deactivated.' 'Audio Data#2' represents the message: 'The manner mode has been deactivated and your mobile phone has been rung.' 'Audio Data#3' represents the message: 'Your mobile phone has been rung.' 'Audio Data#4' represents the message: 'The password of your mobile phone has been changed.' 'Audio Data#5' represents the message: 'Your mobile phone has been changed.' 'Audio Data#6' represents the message: 'Your mobile phone has been power-offed.' The foregoing audio data may be recorded in either male's voice or female's voice.

[3889] Fig. 1400 illustrates the software programs stored in Communication Device Controlling Software Storage Area H57c (Fig. 1395). As described in the present drawing, Communication Device Controlling Software Storage Area H57c stores User Authenticating Software H57c1, Menu Introducing Software H57c2, Line Connecting Software H57c3, Manner Mode Deactivating Software H57c4, Man-

ner Mode Deactivating & Ringing Software H57c5, Ringing Software H57c6, Password Changing Software H57c7, Device Locking Software H57c8, and Power Off Software H57c9. User Authenticating Software H57c1 is the software program described in Fig. 1407. Menu Introducing Software H57c2 is the software program described in Fig. 1408. Line Connecting Software H57c3 is the software program described in Fig. 1409. Manner Mode Deactivating Software H57c4 is the software program described in Fig. 1410. Manner Mode Deactivating & Ringing Software H57c5 is the software program described in Fig. 1411. Ringing Software H57c6 is the software program described in Fig. 1412. Password Changing Software H57c7 is the software program described in Fig. 1413. Device Locking Software H57c8 is the software program described in Fig. 1414. Power Off Software H57c9 is the software program described in Fig. 1415.

[3890] Fig. 1401 illustrates the storage area included in RAM 206 (Fig. 1). As described in the present drawing, RAM 206 includes Communication Device Controlling Information Storage Area 20657a of which the data and the software programs stored therein are described in Fig.1402.

[3891] Fig. 1402 illustrates the storage areas included in Com-

munication Device Controlling Information Storage Area 20657a (Fig. 1401). As described in the present drawing, Communication Device Controlling Information Storage Area 20657a includes Communication Device Controlling Data Storage Area 20657b and Communication Device Controlling Software Storage Area 20657c. Communication Device Controlling Data Storage Area 20657b stores the data necessary to implement the present function on the side of Communication Device 200, such as the ones described in Figs. 1403 through 1405. Communication Device Controlling Software Storage Area 20657c stores the software programs necessary to implement the present function on the side of Communication Device 200, such as the ones described in Fig. 1406.

[3892] The data and software programs stored in Communication Device Controlling Information Storage Area 20657a (Fig. 1402) are downloaded from Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[3893] Fig. 1403 illustrates the storage areas included in Communication Device Controlling Data Storage Area 20657b (Fig. 1402). As described in the present drawing, Communication Device Controlling Data Storage Area 20657b includes Password Data Storage Area 20657b1 and Work

Area 20657b4. Password Data Storage Area 20657b1 stores the data described in Fig. 1404. Work Area 20657b4 is utilized as a work area to perform calculation and to temporarily store data.

[3894] Fig. 1404 illustrates the data stored in Password Data Storage Area 20657b1 (Fig. 1403). As described in the present drawing, Password Data Storage Area 20657b1 comprises two columns, i.e., 'User ID' and 'Password Data'. Column 'User ID' stores the user ID which represents the identification of the user of Communication Device 200. Column 'Password Data' stores the password data set by the user of Communication Device 200. Here, the password data is composed of alphanumeric data. Assuming that the user ID of Communication Device 200 is 'User#1'. In the example described in the present drawing, Password Data Storage Area H57b1 stores the following data: the user ID 'User#1' and the corresponding password data 'Password Data#1'.

[3895] Fig. 1405 illustrates the data stored in Phone Number Data Storage Area 20657b2 (Fig. 1403). As described in the present drawing, Phone Number Data Storage Area 20657b2 comprises two columns, i.e., 'User ID' and 'Phone Number Data'. Column 'User ID' stores the user ID

of the user of Communication Device 200. Column 'Phone Number Data' stores the phone number data which represents the phone number of Communication Device 200. Here, the phone number data is composed of numeric data. In the example described in the present drawing, Phone Number Data Storage Area H57b2 stores the following data: the user ID 'User#1' and the corresponding phone number data 'Phone Number Data#1'.

[3896] Fig. 1406 illustrates the software programs stored in Communication Device Controlling Software Storage Area 20657c (Fig. 1402). As described in the present drawing, Communication Device Controlling Software Storage Area 20657c stores Line Connecting Software 20657c3, Manner Mode Deactivating Software 20657c4, Manner Mode Deactivating & Ringing Software 20657c5, Ringing Software 20657c6, Password Changing Software 20657c7, Device Locking Software 20657c8, and Power Off Software 20657c9. Line Connecting Software 20657c3 is the software program described in Fig. 1409. Manner Mode Deactivating Software 20657c4 is the software program described in Fig. 1410. Manner Mode Deactivating & Ringing Software 20657c5 is the software program described in Fig. 1411. Ringing Software 20657c6 is the software pro-

gram described in Fig. 1412. Password Changing Software 20657c7 is the software program described in Fig. 1413. Device Locking Software 20657c8 is the software program described in Fig. 1414. Power Off Software 20657c9 is the software program described in Fig. 1415.

[3897] Figs. 1407 through 1415 illustrate the software programs which enables the user of Communication Device 200 to remotely control Communication Device 200 via conventional telephone Phone PH.

[3898] Fig. 1407 illustrates User Authenticating Software H57c1 (Fig. 1400) stored in Communication Device Controlling Software Storage Area H57c of Host H (Fig. 429), which authenticates the user of Communication Device 200 to implement the present function via Phone PH. As described in the present drawing, Phone PH calls Host H by dialing the predetermined phone number of Host H (S1). Upon receiving the call from Phone PH (S2) and the line is connected therebetween (S3), the user, by utilizing Phone PH, inputs both his/her password data (S4) and the phone number data of Communication Device 200 (S5). Host H initiates the authentication process by refering to Password Data Storage Area H57b1 (Fig. 1397) and Phone Number Data Storage Area H57b2 (Fig. 1398)) (S6). The

authentication process is completed (and the sequences described hereafter are enabled thereafter) if the password data and the phone number data described in S4 and S5 match with the data stored in Password Data Storage Area H57b1 and Phone Number Data Storage Area H57b2.

[3899] Fig. 1408 illustrates Menu Introducing Software H57c2 (Fig. 1400) stored in Communication Device Controlling Software Storage Area H57c of Host H (Fig. 429), which introduces the menu via Phone PH. As described in the present drawing, Host H retrieves Audio Data#0 from Audio Data Storage Area H57b3 (Fig. 1399) (S1), and sends the data to Phone PH (S2). Upon receiving Audio Data#0 from Host H (S3), Phone PH outputs Audio Data#0 from its speaker (S4). The user presses one of the keys of '1' through '6' wherein the sequences implemented thereafter are described in Figs. 1409 through 1415 (S5).

[3900] Fig. 1409 illustrates Line Connecting Software H57c3 (Fig. 1400) stored in Communication Device Controlling Software Storage Area H57c of Host H (Fig. 429) and Line Connecting Software 20657c3 (Fig. 1406) stored in Communication Device Controlling Software Storage Area 20657c of Communication Device 200, which connect line

between Host H and Communication Device 200. As described in the present drawing, Host H calls Communication Device 200 by retrieving the corresponding phone number data from Phone Number Data Storage Area H57b2 (Fig. 1398) (S1). Upon Communication Device 200 receiving the call from Host H (S2), the line is connected therebetween (S3). For the avoidance of doubt, the line is connected between Host H and Communication Device 200 merely to implement the present function, and a voice communication between human beings is not enabled thereafter.

[3901] Fig. 1410 illustrates Manner Mode Deactivating Software H57c4 (Fig. 1400) stored in Communication Device Controlling Software Storage Area H57c of Host H (Fig. 429) and Manner Mode Deactivating Software 20657c4 (Fig. 1406) stored in Communication Device Controlling Software Storage Area 20657c of Communication Device 200, which deactivate the manner mode of Communication Device 200. Here, Communication Device 200 activates Vibrator 217 (Fig. 1) when Communication Device 200 is in the manner mode and outputs a ringing sound from Speaker 216 (Fig. 1) when Communication Device 200 is not in the manner mode, upon receiving an incoming call.

Assume that the user presses key '1' of Phone PH (S1). In response, Phone PH sends the corresponding signal to Host H (S2). Host H, upon receiving the signal described in S2, sends a manner mode deactivating command to Communication Device 200 (S3). Upon receiving the manner mode deactivating command from Host H (S4), Communication Device 200 deactivates the manner mode (S5). Host H retrieves Audio Data#1 from Audio Data Storage Area H57b3 (Fig. 1399) and sends the data to Phone PH (S6). Upon receiving Audio Data#1 from Host H, Phone PH outputs the data from its speaker (S7). Normally the purpose to output the ringing sound from Speaker 216 is to give a notification to the user that Communication Device 200 has received an incoming call, and a voice communication is enabled thereafter upon answering the call. In contrast, the purpose to output the ringing sound from Speaker 216 by executing Manner Mode Deactivating & Ringing Software H57c5 and Manner Mode Deactivating & Ringing Software 20657c5 is merely to let the user to identify the location of Communication Device 200. Therefore, a voice communication between human beings is not enabled thereafter.

[3902] Fig. 1411 illustrates Manner Mode Deactivating & Ringing

Software H57c5 (Fig. 1400) stored in Communication Device Controlling Software Storage Area H57c of Host H (Fig. 429) and Manner Mode Deactivating & Ringing Software 20657c5 (Fig. 1406) stored in Communication Device Controlling Software Storage Area 20657c of Communication Device 200, which deactivate the manner mode of Communication Device 200 and outputs a ringing sound thereafter. Assume that the user presses key '2' of Phone PH (S1). In response, Phone PH sends the corresponding signal to Host H (S2). Host H, upon receiving the signal described in S2, sends a manner mode deactivating & device device ringing command to Communication Device 200 (S3). Upon receiving the manner mode deactivating & device device ringing command from Host H (S4), Communication Device 200 deactivates the manner mode (S5) and outputs a ring data from Speaker 216 (S6). Host H retrieves Audio Data#2 from Audio Data Storage Area H57b3 (Fig. 1399) and sends the data to Phone PH (S7). Upon receiving Audio Data#2 from Host H, Phone PH outputs the data from its speaker (S8). Normally the purpose to output the ringing sound from Speaker 216 is to give a notification to the user that Communication Device 200 has received an incoming call, and a voice communication

is enabled thereafter upon answering the call. In contrast, the purpose to output the ringing sound from Speaker 216 by executing Manner Mode Deactivating & Ringing Software H57c5 and Manner Mode Deactivating & Ringing Software 20657c5 is merely to let the user to identify the location of Communication Device 200. Therefore, a voice communication between human beings is not enabled thereafter by implementing the present function.

[3903] Fig. 1412 illustrates Ringing Software H57c6 (Fig. 1400) stored in Communication Device Controlling Software Storage Area H57c of Host H (Fig. 429) and Ringing Software 20657c6 (Fig. 1406) stored in Communication Device Controlling Software Storage Area 20657c of Communication Device 200, which output a ringing sound from Speaker 216 (Fig. 1). Assume that the user presses key '3' of Phone PH (S1). In response, Phone PH sends the corresponding signal to Host H (S2). Host H, upon receiving the signal described in S2, sends a device device ringing command to Communication Device 200 (S3). Upon receiving the device device ringing command from Host H (S4), Communication Device 200 outputs a ring data from Speaker 216 (S5). Host H retrieves Audio Data#3 from Audio Data Storage Area H57b3 (Fig. 1399) and sends the

data to Phone PH (S6). Upon receiving Audio Data#3 from Host H, Phone PH outputs the data from its speaker (S7). Normally the purpose to output the ringing sound from Speaker 216 is to give a notification to the user that Communication Device 200 has received an incoming call, and a voice communication is enabled thereafter upon answering the call. In contrast, the purpose to output the ringing sound from Speaker 216 by executing Ringing Software H57c6 and Ringing Software 20657c6 is merely to let the user to identify the location of Communication Device 200. Therefore, a voice communication between human beings is not enabled thereafter by implementing the present function.

[3904] Fig. 1413 illustrates Password Changing Software H57c7 (Fig. 1400) stored in Communication Device Controlling Software Storage Area H57c of Host H (Fig. 429) and Password Changing Software 20657c7 (Fig. 1406) stored in Communication Device Controlling Software Storage Area 20657c of Communication Device 200, which change the password necessary to operate Communication Device 200. Assume that the user presses key '4' of Phone PH (S1). In response, Phone PH sends the corresponding signal to Host H (S2). The user then enters a new password

data by utilizing Phone PH (S3), which is sent to Communication Device 200 by Host H (S4). Upon receiving the new password data from Host H (S5), Communication Device 200 stores the new password data in Password Data Storage Area 20657b1 (Fig. 1404) and the old password data is erased (S6). Host H retrieves Audio Data#4 from Audio Data Storage Area H57b3 (Fig. 1399) and sends the data to Phone PH (S7). Upon receiving Audio Data#4 from Host H, Phone PH outputs the data from its speaker (S8).

[3905] Fig. 1414 illustrates Device Locking Software H57c8 (Fig. 1400) stored in Communication Device Controlling Software Storage Area H57c of Host H (Fig. 429) and Device Locking Software 20657c8 (Fig. 1406) stored in Communication Device Controlling Software Storage Area 20657c of Communication Device 200, which lock Communication Device 200, i.e., nullify any input signal input via Input Device 210 (Fig. 1). Assume that the user presses key '5' of Phone PH (S1). In response, Phone PH sends the corresponding signal to Host H (S2). Host H, upon receiving the signal described in S2, sends a device locking command to Communication Device 200 (S3). Upon receiving the device locking command from Host H (S4), Communication Device 200 is locked thereafter, i.e., any input via In-

put Device 210 is nullified unless a password data matching to the one stored in Password Data Storage Area 20657b1 (Fig. 1404) is entered (S5). Host H retrieves Audio Data#5 from Audio Data Storage Area H57b3 (Fig. 1399) and sends the data to Phone PH (S6). Upon receiving Audio Data#5 from Host H, Phone PH outputs the data from its speaker (S7).

[3906] Fig. 1415 illustrates Power Off Software H57c9 (Fig. 1400) stored in Communication Device Controlling Software Storage Area H57c of Host H (Fig. 429) and Power Off Software 20657c9 (Fig. 1406) stored in Communication Device Controlling Software Storage Area 20657c of Communication Device 200, which turn off the power of Communication Device 200. Assume that the user presses key '6' of Phone PH (S1). In response, Phone PH sends the corresponding signal to Host H (S2). Host H, upon receiving the signal described in S2, sends a power off command to Communication Device 200 (S3). Upon receiving the power off command from Host H (S4), Communication Device 200 turns off the power of itself (S5). Host H retrieves Audio Data#6 from Audio Data Storage Area H57b3 (Fig. 1399) and sends the data to Phone PH (S6). Upon receiving Audio Data#6 from Host H, Phone PH out-

puts the data from its speaker (S7).

[3907] *<<Communication Device Remote Controlling Function (By Phone) -- Summary>>*

[3908] (1) A host computer connected to a conventional telephone wherein, in response to a specific telephone signal received from said conventional telephone, said host computer sends a specific command the corresponding to said specific telephone signal.

[3909] (2) A communication device remote controlling software program stored in a host computer and/or a communication device wherein, in response to a specific telephone signal received from a conventional telephone, said communication device remote controlling software program sends a specific command the corresponding to said specific telephone signal to said communication device, said communication device under the command of said communication device remote controlling software program implements a specific communication device action in accordance with said specific command.

[3910] (3) The host computer of summary (1) thereby enabling the user of said conventional telephone to remotely control his/her communication device.

[3911] (4) The host computer of summary (1), wherein said spe-

cific command is a manner mode deactivating command.

[3912] (5) The host computer of summary (1), wherein said specific command is a device device ringing command.

[3913] (6) The host computer of summary (1), wherein said specific command is a password changing command.

[3914] (7) The host computer of summary (1), wherein said specific command is a device locking command.

[3915] (8) The host computer of summary (1), wherein said specific command is a power off command.

[3916] (9) The communication device remote controlling software program of summary (2) thereby enabling the user of said conventional telephone to remotely control his/her communication device.

[3917] (10) The communication device remote controlling software program of summary (2), wherein said specific command is a manner mode deactivating command.

[3918] (11) The communication device remote controlling software program of summary (2), wherein said specific command is a device device ringing command.

[3919] (12) The communication device remote controlling software program of summary (2), wherein said specific command is a password changing command.

[3920] (13) The communication device remote controlling soft-

ware program of summary (2), wherein said specific command is a device locking command.

[3921] (14) The communication device remote controlling software program of summary (2), wherein said specific command is a power off command.

[3922] *<<Communication Device Remote Controlling Function (By Web)>>*

[3923] Figs. 1416 through 1437 illustrate the communication device remote controlling function (by web) which enables the user of Communication Device 200 to remotely control Communication Device 200 by an ordinary personal computer (Personal Computer PC) via the Internet, i.e., by accessing a certain web site. Here, Personal Computer PC may be any type of personal computer, including a desktop computer, lap top computer, and PDA.

[3924] Fig. 1416 illustrates the storage areas included in Host H (Fig. 429). As described in the present drawing, Host H includes Communication Device Controlling Information Storage Area H58a of which the data and the software programs stored therein are described in Fig. 1417.

[3925] Fig. 1417 illustrates the storage areas included in Communication Device Controlling Information Storage Area H58a (Fig. 1416). As described in the present drawing,

Communication Device Controlling Information Storage Area H58a includes Communication Device Controlling Data Storage Area H58b and Communication Device Controlling Software Storage Area H58c. Communication Device Controlling Data Storage Area H58b stores the data necessary to implement the present function on the side of Host H (Fig. 429), such as the ones described in Figs. 1418 through 1421. Communication Device Controlling Software Storage Area H58c stores the software programs necessary to implement the present function on the side of Host H, such as the ones described in Fig. 1422.

[3926] Fig. 1418 illustrates the storage areas included in Communication Device Controlling Data Storage Area H58b (Fig. 1417). As described in the present drawing, Communication Device Controlling Data Storage Area H58b includes Password Data Storage Area H58b1, Phone Number Data Storage Area H58b2, Web Display Data Storage Area H58b3, and Work Area H58b4. Password Data Storage Area H58b1 stores the data described in Fig. 1419. Phone Number Data Storage Area H58b2 stores the data described in Fig. 1420. Web Display Data Storage Area H58b3 stores the data described in Fig. 1421. Work Area H58b4 is utilized as a work area to perform calculation

and to temporarily store data.

[3927] Fig. 1419 illustrates the data stored in Password Data Storage Area H58b1 (Fig. 1418). As described in the present drawing, Password Data Storage Area H58b1 comprises two columns, i.e., 'User ID' and 'Password Data'. Column 'User ID' stores the user IDs, and each user ID represents the identification of the user of Communication Device 200. Column 'Password Data' stores the password data, and each password data represents the password set by the user of the corresponding user ID. Here, each password data is composed of alphanumeric data. In the example described in the present drawing, Password Data Storage Area H58b1 stores the following data: the user ID 'User#1' and the corresponding password data 'Password Data#1'; the user ID 'User#2' and the corresponding password data 'Password Data#2'; the user ID 'User#3' and the corresponding password data 'Password Data#3'; the user ID 'User#4' and the corresponding password data 'Password Data#4'; and the user ID 'User#5' and the corresponding password data 'Password Data#5'.

[3928] Fig. 1420 illustrates the data stored in Phone Number Data Storage Area H58b2 (Fig. 1418). As described in the present drawing, Phone Number Data Storage Area H58b2

comprises two columns, i.e., 'User ID' and 'Phone Number Data'. Column 'User ID' stores the user IDs, and each user ID represents the identification of the user of Communication Device 200. Column 'Phone Number Data' stores the phone number data, and each phone number data represents the phone number of the user of the corresponding user ID. Here, each phone number data is composed of numeric data. In the example described in the present drawing, Phone Number Data Storage Area H58b2 stores the following data: the user ID 'User#1' and the corresponding phone number data 'Phone Number Data#1'; the user ID 'User#2' and the corresponding phone number data 'Phone Number Data#2'; the user ID 'User#3' and the corresponding phone number data 'Phone Number Data#3'; the user ID 'User#4' and the corresponding phone number data 'Phone Number Data#4'; and the user ID 'User#5' and the corresponding phone number data 'Phone Number Data#5'.

[3929] Fig. 1421 illustrates the data stored in Web Display Data Storage Area H58b3 (Fig. 1418). As described in the present drawing, Web Display Data Storage Area H58b3 comprises two columns, i.e., 'Web Display ID' and 'Web Display Data'. Column 'Web Display ID' stores the web dis-

play IDs, and each web display ID represents the identification of the web display data stored in column 'Web Display Data'. Column 'Web Display Data' stores the web display data, and each web display data represents a message displayed on Personal Computer PC. In the example described in the present drawing, Web Display Data Storage Area H58b3 stores the following data: the web display ID 'Web Display#0' and the corresponding web display data 'Web Display Data#0'; the web display ID 'Web Display#1' and the corresponding web display data 'Web Display Data#1'; the web display ID 'Web Display#2' and the corresponding web display data 'Web Display Data#2'; the web display ID 'Web Display#3' and the corresponding web display data 'Web Display Data#3'; the web display ID 'Web Display#4' and the corresponding web display data 'Web Display Data#4'; the web display ID 'Web Display#5' and the corresponding web display data 'Web Display Data#5'; and the web display ID 'Web Display#6' and the corresponding web display data 'Web Display Data#6'. 'Web Display Data#0' represents the message: 'To deactivate manner mode, press 1. To deactivate manner mode and ring your mobile phone, press 2. To ring your mobile phone, press 3. To change password of your mobile

phone, press 4. To lock your mobile phone, press 5. To power off your mobile phone, press 6.' 'Web Display Data#1' represents the message: 'The manner mode has been deactivated.' 'Web Display Data#2' represents the message: 'The manner mode has been deactivated and your mobile phone has been rung.' 'Web Display Data#3' represents the message: 'Your mobile phone has been rung.' 'Web Display Data#4' represents the message: 'The password of your mobile phone has been changed.' 'Web Display Data#5' represents the message: 'Your mobile phone has been changed.' 'Web Display Data#6' represents the message: 'Your mobile phone has been power-offed.'Fig. 1421a illustrates the display of Personal Computer PC. Referring to the present drawing, Home Page 20158HP, i.e., a home page to implement the present function is displayed on Personal Computer PC. Home Page 20158HP is primarily composed of Web Display Data#0 (Fig. 1421) and six buttons, i.e., Buttons 1 through 6. Following the instruction described in Web Display Data#0, the user may select one of the buttons to implement the desired fuction as described hereinafter.

[3930] Fig. 1422 illustrates the software programs stored in Communication Device Controlling Software Storage Area

H58c (Fig. 1417). As described in the present drawing, Communication Device Controlling Software Storage Area H58c stores User Authenticating Software H58c1, Menu Introducing Software H58c2, Line Connecting Software H58c3, Manner Mode Deactivating Software H58c4, Manner Mode Deactivating & Ringing Software H58c5, Ringing Software H58c6, Password Changing Software H58c7, Device Locking Software H58c8, and Power Off Software H58c9. User Authenticating Software H58c1 is the software program described in Fig. 1429. Menu Introducing Software H58c2 is the software program described in Fig. 1430. Line Connecting Software H58c3 is the software program described in Fig. 1431. Manner Mode Deactivating Software H58c4 is the software program described in Fig. 1432. Manner Mode Deactivating & Ringing Software H58c5 is the software program described in Fig. 1433. Ringing Software H58c6 is the software program described in Fig. 1434. Password Changing Software H58c7 is the software program described in Fig. 1435. Device Locking Software H58c8 is the software program described in Fig. 1436. Power Off Software H58c9 is the software program described in Fig. 1437.

[3931] Fig. 1423 illustrates the storage area included in RAM 206

(Fig. 1). As described in the present drawing, RAM 206 includes Communication Device Controlling Information Storage Area 20658a of which the data and the software programs stored therein are described in Fig.1424.

[3932] Fig. 1424 illustrates the storage areas included in Communication Device Controlling Information Storage Area 20658a (Fig. 1423). As described in the present drawing, Communication Device Controlling Information Storage Area 20658a includes Communication Device Controlling Data Storage Area 20658b and Communication Device Controlling Software Storage Area 20658c. Communication Device Controlling Data Storage Area 20658b stores the data necessary to implement the present function on the side of Communication Device 200, such as the ones described in Figs. 1425 through 1427. Communication Device Controlling Software Storage Area 20658c stores the software programs necessary to implement the present function on the side of Communication Device 200, such as the ones described in Fig. 1428.

[3933] The data and software programs stored in Communication Device Controlling Information Storage Area 20658a (Fig. 1424) are downloaded from Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[3934] Fig. 1425 illustrates the storage areas included in Communication Device Controlling Data Storage Area 20658b (Fig. 1424). As described in the present drawing, Communication Device Controlling Data Storage Area 20658b includes Password Data Storage Area 20658b1 and Work Area 20658b4. Password Data Storage Area 20658b1 stores the data described in Fig. 1426. Work Area 20658b4 is utilized as a work area to perform calculation and to temporarily store data.

[3935] Fig. 1426 illustrates the data stored in Password Data Storage Area 20658b1 (Fig. 1425). As described in the present drawing, Password Data Storage Area 20658b1 comprises two columns, i.e., 'User ID' and 'Password Data'. Column 'User ID' stores the user ID which represents the identification of the user of Communication Device 200. Column 'Password Data' stores the password data set by the user of Communication Device 200. Here, the password data is composed of alphanumeric data. Assuming that the user ID of Communication Device 200 is 'User#1'. In the example described in the present drawing, Password Data Storage Area H58b1 stores the following data: the user ID 'User#1' and the corresponding password data 'Password Data#1'.

[3936] Fig. 1427 illustrates the data stored in Phone Number Data Storage Area 20658b2 (Fig. 1425). As described in the present drawing, Phone Number Data Storage Area 20658b2 comprises two columns, i.e., 'User ID' and 'Phone Number Data'. Column 'User ID' stores the user ID of the user of Communication Device 200. Column 'Phone Number Data' stores the phone number data which represents the phone number of Communication Device 200. Here, the phone number data is composed of numeric data. In the example described in the present drawing, Phone Number Data Storage Area H58b2 stores the following data: the user ID 'User#1' and the corresponding phone number data 'Phone Number Data#1'.

[3937] Fig. 1428 illustrates the software programs stored in Communication Device Controlling Software Storage Area 20658c (Fig. 1424). As described in the present drawing, Communication Device Controlling Software Storage Area 20658c stores Line Connecting Software 20658c3, Manner Mode Deactivating Software 20658c4, Manner Mode Deactivating & Ringing Software 20658c5, Ringing Software 20658c6, Password Changing Software 20658c7, Device Locking Software 20658c8, and Power Off Software 20658c9. Line Connecting Software 20658c3 is the soft-

ware program described in Fig. 1431. Manner Mode Deactivating Software 20658c4 is the software program described in Fig. 1432. Manner Mode Deactivating & Ringing Software 20658c5 is the software program described in Fig. 1433. Ringing Software 20658c6 is the software program described in Fig. 1434. Password Changing Software 20658c7 is the software program described in Fig. 1435. Device Locking Software 20658c8 is the software program described in Fig. 1436. Power Off Software 20658c9 is the software program described in Fig. 1437.

[3938] Figs. 1429 through 1437 illustrate the software programs which enables the user of Communication Device 200 to remotely control Communication Device 200 by Personal Computer PC.

[3939] Fig. 1429 illustrates User Authenticating Software H58c1 (Fig. 1422) stored in Communication Device Controlling Software Storage Area H58c of Host H (Fig. 429), which authenticates the user of Communication Device 200 to implement the present function via Personal Computer PC. As described in the present drawing, Personal Computer PC sends an access request to Host H via the Internet (S1). Upon receiving the request from Personal Computer PC (S2) and the line is connected therebetween (S3), the user,

by utilizing Personal Computer PC, inputs both his/her password data (S4) and the phone number data of Communication Device 200 (S5). Host H initiates the authentication process by refering to Password Data Storage Area H58b1 (Fig. 1419) and Phone Number Data Storage Area H58b2 (Fig. 1420)) (S6). The authentication process is completed (and the sequences described hereafter are enabled thereafter) if the password data and the phone number data described in S4 and S5 match with the data stored in Password Data Storage Area H58b1 and Phone Number Data Storage Area H58b2.

[3940] Fig. 1430 illustrates Menu Introducing Software H58c2 (Fig. 1422) stored in Communication Device Controlling Software Storage Area H58c of Host H (Fig. 429), which introduces the menu on Personal Computer PC. As described in the present drawing, Host H retrieves Web Display Data#0 from Web Display Data Storage Area H58b3 (Fig. 1421) (S1), and sends the data to Personal Computer PC (S2). Upon receiving Web Display Data#0 from Host H (S3), Personal Computer PC displays Web Display Data#0 on its display (S4). The user selects from one of the buttons of '1' through '6' wherein the sequences implemented thereafter are described in Figs. 1431 through 1437 (S5).

[3941] Fig. 1431 illustrates Line Connecting Software H58c3 (Fig. 1422) stored in Communication Device Controlling Software Storage Area H58c of Host H (Fig. 429) and Line Connecting Software 20658c3 (Fig. 1428) stored in Communication Device Controlling Software Storage Area 20658c of Communication Device 200, which connect line between Host H and Communication Device 200. As described in the present drawing, Host H calls Communication Device 200 by retrieving the corresponding phone number data from Phone Number Data Storage Area H58b2 (Fig. 1420) (S1). Upon Communication Device 200 receiving the call from Host H (S2), the line is connected therebetween (S3). For the avoidance of doubt, the line is connected between Host H and Communication Device 200 merely to implement the present function, and a voice communication between human beings is not enabled thereafter.

[3942] Fig. 1432 illustrates Manner Mode Deactivating Software H58c4 (Fig. 1422) stored in Communication Device Controlling Software Storage Area H58c of Host H (Fig. 429) and Manner Mode Deactivating Software 20658c4 (Fig. 1428) stored in Communication Device Controlling Software Storage Area 20658c of Communication Device 200,

which deactivate the manner mode of Communication Device 200. Here, Communication Device 200 activates Vibrator 217 (Fig. 1) when Communication Device 200 is in the manner mode and outputs a ringing sound from Speaker 216 (Fig. 1) when Communication Device 200 is not in the manner mode, upon receiving an incoming call. Assume that the user selects button '1" displayed on Personal Computer PC (S1). In response, Personal Computer PC sends the corresponding signal to Host H via the Internet (S2). Host H, upon receiving the signal described in S2, sends a manner mode deactivating command to Communication Device 200 (S3). Upon receiving the manner mode deactivating command from Host H (S4), Communication Device 200 deactivates the manner mode (S5). Host H retrieves Web Display Data#1 from Web Display Data Storage Area H58b3 (Fig. 1421) and sends the data to Personal Computer PC (S6). Upon receiving Web Display Data#1 from Host H, Personal Computer PC displays the data (S7). Normally the purpose to output the ringing sound from Speaker 216 is to give a notification to the user that Communication Device 200 has received an incoming call, and a voice communication is enabled thereafter upon answering the call. In contrast, the purpose to

output the ringing sound from Speaker 216 by executing Manner Mode Deactivating & Ringing Software H58c5 and Manner Mode Deactivating & Ringing Software 20658c5 is merely to let the user to identify the location of Communication Device 200. Therefore, a voice communication between human beings is not enabled thereafter.

[3943] Fig. 1433 illustrates Manner Mode Deactivating & Ringing Software H58c5 (Fig. 1422) stored in Communication Device Controlling Software Storage Area H58c of Host H (Fig. 429) and Manner Mode Deactivating & Ringing Software 20658c5 (Fig. 1428) stored in Communication Device Controlling Software Storage Area 20658c of Communication Device 200, which deactivate the manner mode of Communication Device 200 and outputs a ringing sound thereafter. Assume that the user selects button '2" displayed on Personal Computer PC (S1). In response, Personal Computer PC sends the corresponding signal to Host H via the Internet (S2). Host H, upon receiving the signal described in S2, sends a manner mode deactivating & device device ringing command to Communication Device 200 (S3). Upon receiving the manner mode deactivating & device device ringing command from Host H (S4), Communication Device 200 deactivates the manner mode

(S5) and outputs a ring data from Speaker 216 (S6). Host H retrieves Web Display Data#2 from Web Display Data Storage Area H58b3 (Fig. 1421) and sends the data to Personal Computer PC (S7). Upon receiving Web Display Data#2 from Host H, Personal Computer PC displays the data (S8). Normally the purpose to output the ringing sound from Speaker 216 is to give a notification to the user that Communication Device 200 has received an incoming call, and a voice communication is enabled thereafter upon answering the call. In contrast, the purpose to output the ringing sound from Speaker 216 by executing Manner Mode Deactivating & Ringing Software H58c5 and Manner Mode Deactivating & Ringing Software 20658c5 is merely to let the user to identify the location of Communication Device 200. Therefore, a voice communication between human beings is not enabled thereafter by implementing the present function.

[3944] Fig. 1434 illustrates Ringing Software H58c6 (Fig. 1422) stored in Communication Device Controlling Software Storage Area H58c of Host H (Fig. 429) and Ringing Software 20658c6 (Fig. 1428) stored in Communication Device Controlling Software Storage Area 20658c of Communication Device 200, which output a ringing sound

from Speaker 216 (Fig. 1). Assume that the user selects button '3" displayed on Personal Computer PC (S1). In response, Personal Computer PC sends the corresponding signal to Host H via the Internet (S2). Host H, upon receiving the signal described in S2, sends a device ringing command to Communication Device 200 (S3). Upon receiving the device ringing command from Host H (S4), Communication Device 200 outputs a ring data from Speaker 216 (S5). Host H retrieves Web Display Data#3 from Web Display Data Storage Area H58b3 (Fig. 1421) and sends the data to Personal Computer PC (S6). Upon receiving Web Display Data#3 from Host H, Personal Computer PC displays the data (S7). Normally the purpose to output the ringing sound from Speaker 216 is to give a notification to the user that Communication Device 200 has received an incoming call, and a voice communication is enabled thereafter upon answering the call. In contrast, the purpose to output the ringing sound from Speaker 216 by executing Ringing Software H58c6 and Ringing Software 20658c6 is merely to let the user to identify the location of Communication Device 200. Therefore, a voice communication between human beings is not enabled thereafter by implementing the present function.

[3945] Fig. 1435 illustrates Password Changing Software H58c7 (Fig. 1422) stored in Communication Device Controlling Software Storage Area H58c of Host H (Fig. 429) and Password Changing Software 20658c7 (Fig. 1428) stored in Communication Device Controlling Software Storage Area 20658c of Communication Device 200, which change the password necessary to operate Communication Device 200. Assume that the user selects button '4" displayed on Personal Computer PC (S1). In response, Personal Computer PC sends the corresponding signal to Host H via the Internet (S2). The user then enters a new password data by utilizing Personal Computer PC (S3), which is sent to Communication Device 200 by Host H (S4). Upon receiving the new password data from Host H (S5), Communication Device 200 stores the new password data in Password Data Storage Area 20658b1 (Fig. 1426) and the old password data is erased (S6). Host H retrieves Web Display Data#4 from Web Display Data Storage Area H58b3 (Fig. 1421) and sends the data to Personal Computer PC (S7). Upon receiving Web Display Data#4 from Host H, Personal Computer PC displays the data (S8).

[3946] Fig. 1436 illustrates Device Locking Software H58c8 (Fig. 1422) stored in Communication Device Controlling Soft-

ware Storage Area H58c of Host H (Fig. 429) and Device Locking Software 20658c8 (Fig. 1428) stored in Communication Device Controlling Software Storage Area 20658c of Communication Device 200, which lock Communication Device 200, i.e., nullify any input signal input via Input Device 210 (Fig. 1). Assume that the user selects button '5" displayed on Personal Computer PC (S1). In response, Personal Computer PC sends the corresponding signal to Host H via the Internet (S2). Host H, upon receiving the signal described in S2, sends a device locking command to Communication Device 200 (S3). Upon receiving the device locking command from Host H (S4), Communication Device 200 is locked thereafter, i.e., any input via Input Device 210 is nullified unless a password data matching to the one stored in Password Data Storage Area 20658b1 (Fig. 1426) is entered (S5). Host H retrieves Web Display Data#5 from Web Display Data Storage Area H58b3 (Fig. 1421) and sends the data to Personal Computer PC (S6). Upon receiving Web Display Data#5 from Host H, Personal Computer PC displays the data (S7).

[3947] Fig. 1437 illustrates Power Off Software H58c9 (Fig. 1422) stored in Communication Device Controlling Software Storage Area H58c of Host H (Fig. 429) and Power Off

Software 20658c9 (Fig. 1428) stored in Communication Device Controlling Software Storage Area 20658c of Communication Device 200, which turn off the power of Communication Device 200. Assume that the user selects button '6" displayed on Personal Computer PC (S1). In response, Personal Computer PC sends the corresponding signal to Host H via the Internet (S2). Host H, upon receiving the signal described in S2, sends a power off command to Communication Device 200 (S3). Upon receiving the power off command from Host H (S4), Communication Device 200 turns off the power of itself (S5). Host H retrieves Web Display Data#6 from Web Display Data Storage Area H58b3 (Fig. 1421) and sends the data to Personal Computer PC (S6). Upon receiving Web Display Data#6 from Host H, Personal Computer PC displays the data (S7).

[3948] *<<Communication Device Remote Controlling Function (By Web) -- Summary>>*

[3949] (1) A host computer connected to the Internet wherein, in response to a specific web signal received from a personal computer, said host computer sends a specific command the corresponding to said specific web signal.

[3950] (2) A communication device remote controlling software

program stored in a host computer and/or a communication device wherein, in response to a specific web signal received from a personal computer, said communication device remote controlling software program sends a specific command the corresponding to said specific web signal to said communication device, said communication device under the command of said communication device remote controlling software program implements a specific communication device action in accordance with said specific command.

[3951] (3) The host computer of summary (1) thereby enabling the user of said personal computer to remotely control his/her communication device.

[3952] (4) The host computer of summary (1), wherein said specific command is a manner mode deactivating command.

[3953] (5) The host computer of summary (1), wherein said specific command is a device ringing command.

[3954] (6) The host computer of summary (1), wherein said specific command is a password changing command.

[3955] (7) The host computer of summary (1), wherein said specific command is a device locking command.

[3956] (8) The host computer of summary (1), wherein said specific command is a power off command.

[3957] (9) The communication device remote controlling software program of summary (2) thereby enabling the user of said personal computer to remotely control his/her communication device.

[3958] (10) The communication device remote controlling software program of summary (2), wherein said specific command is a manner mode deactivating command.

[3959] (11) The communication device remote controlling software program of summary (2), wherein said specific command is a device ringing command.

[3960] (12) The communication device remote controlling software program of summary (2), wherein said specific command is a password changing command.

[3961] (13) The communication device remote controlling software program of summary (2), wherein said specific command is a device locking command.

[3962] (14) The communication device remote controlling software program of summary (2), wherein said specific command is a power off command.

[3963] *<<Shortcut Icon Displaying Function>>*

[3964] Figs. 1438 through 1455 illustrate the shortcut icon displaying function which displays one or more of shortcut icons on LCD 201 (Fig. 1) of Communication Device 200.

The user of Communication Device 200 can execute the software programs in a convenient manner by selecting (e.g., clicking or double clicking) the shortcut icons. The foregoing software programs may be any software programs described in this specification.

[3965] Fig. 1438 illustrates the shortcut icons displayed on LCD 201 (Fig. 1) of Communication Device 200 by implementing the present function. Referring to the present drawing, three shortcut icons are displayed on LCD 201 (Fig. 1), i.e., Shortcut Icon#1, Shortcut Icon#2, and Shortcut Icon#3. The user of Communication Device 200 can execute the software programs by selecting (e.g., clicking or double clicking) one of the shortcut icons. For example, assume that Shortcut Icon#1 represents MS Word 97. By selecting (e.g., clicking or double clicking) Shortcut Icon#1, the user can execute MS Word 97 installed in Communication Device 200 or Host H. Three shortcut icons are illustrated in the present drawing, however, only for purposes of simplifying the explanation of the present function. Therefore, as many shortcut icons equivalent to the number of the software programs described in this specification may be displayed on LCD 201, and the corresponding software programs may be executed by im-

plementing the present function.

[3966] Fig. 1439 illustrates the storage area included in RAM 206 (Fig. 1). As described in the present drawing, RAM 206 includes Shortcut Icon Displaying Information Storage Area 20659a of which the data and the software programs stored therein are described in Fig. 1440.

[3967] Fig. 1440 illustrates the storage areas included in Shortcut Icon Displaying Information Storage Area 20659a (Fig. 1439). As described in the present drawing, Shortcut Icon Displaying Information Storage Area 20659a includes Shortcut Icon Displaying Data Storage Area 20659b and Shortcut Icon Displaying Software Storage Area 20659c. Shortcut Icon Displaying Data Storage Area 20659b stores the data necessary to implement the present function, such as the ones described in Figs. 1441. Shortcut Icon Displaying Software Storage Area 20659c stores the software programs necessary to implement the present function, such as the ones described in Fig. 1446.

[3968] The data and software programs stored in Shortcut Icon Displaying Software Storage Area 20659c (Fig. 1440) are downloaded from Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[3969] Fig. 1441 illustrates the storage areas included in Shortcut

Icon Displaying Data Storage Area 20659b (Fig. 1440). As described in the present drawing, Shortcut Icon Displaying Data Storage Area 20659b includes Shortcut Icon Image Data Storage Area 20659b1, Shortcut Icon Location Data Storage Area 20659b2, Shortcut Icon Link Data Storage Area 20659b3, and Selected Shortcut Icon Data Storage Area 20659b4. Shortcut Icon Image Data Storage Area 20659b1 stores the data described in Fig. 1442. Shortcut Icon Location Data Storage Area 20659b2 stores the data described in Fig. 1443. Shortcut Icon Link Data Storage Area 20659b3 stores the data described in Fig. 1444. Selected Shortcut Icon Data Storage Area 20659b4 stores the data described in Fig. 1445.

[3970] Fig. 1442 illustrates the data stored in Shortcut Icon Image Data Storage Area 20659b1 (Fig. 1441). As described in the present drawing, Shortcut Icon Image Data Storage Area 20659b1 comprises two columns, i.e., 'Shortcut Icon ID' and 'Shortcut Icon Image Data'. Column 'Shortcut Icon ID' stores the shortcut icon IDs, and each shortcut icon ID is the identification of the corresponding shortcut icon image data stored in column 'Shortcut Icon Image Data'. Column 'Shortcut Icon Image Data' stores the shortcut icon image data, and each shortcut icon image data is the

image data of the shortcut icon displayed on LCD 201 (Fig. 1) as described in Fig. 1438. In the example described in the present drawing, Shortcut Icon Image Data Storage Area 20659b1 stores the following data: the shortcut icon ID 'Shortcut Icon#1' and the corresponding shortcut icon image data 'Shortcut Icon Image Data#1'; the shortcut icon ID 'Shortcut Icon#2' and the corresponding shortcut icon image data 'Shortcut Icon Image Data#2'; the shortcut icon ID 'Shortcut Icon#3' and the corresponding shortcut icon image data 'Shortcut Icon Image Data#3'; and the shortcut icon ID 'Shortcut Icon#4' and the corresponding shortcut icon image data 'Shortcut Icon Image Data#4'.

[3971] Fig. 1443 illustrates the data stored in Shortcut Icon Location Data Storage Area 20659b2 (Fig. 1441). As described in the present drawing, Shortcut Icon Location Data Storage Area 20659b2 comprises two columns, i.e., 'Shortcut Icon ID' and 'Shortcut Icon Location Data'. Column 'Shortcut Icon ID' stores the shortcut icon IDs described hereinbefore. Column 'Shortcut Icon Location Data' stores the shortcut icon location data, and each shortcut icon location data indicates the location displayed on LCD 201 (Fig. 1) in (x,y) format of the shortcut icon image data of the

corresponding shortcut icon ID. In the example described in the present drawing, Shortcut Icon Location Data Storage Area 20659b2 stores the following data: the shortcut icon ID 'Shortcut Icon#1' and the corresponding shortcut icon location data 'Shortcut Icon Location Data#1'; the shortcut icon ID 'Shortcut Icon#2' and the corresponding shortcut icon location data 'Shortcut Icon Location Data#2'; the shortcut icon ID 'Shortcut Icon#3' and the corresponding shortcut icon location data 'Shortcut Icon Location Data#3'; and the shortcut icon ID 'Shortcut Icon#4' and the corresponding shortcut icon location data 'Shortcut Icon Location Data#4'.

[3972] Fig. 1444 illustrates the data stored in Shortcut Icon Link Data Storage Area 20659b3 (Fig. 1441). As described in the present drawing, Shortcut Icon Link Data Storage Area 20659b3 comprises two columns, i.e., 'Shortcut Icon ID' and 'Shortcut Icon Link Data'. Column 'Shortcut Icon ID' stores the shortcut icon IDs described hereinbefore. Column 'Shortcut Icon Link Data' stores the shortcut icon link data, and each shortcut icon link data represents the location in Communication Device 200 of the software program stored therein represented by the shortcut icon of the corresponding shortcut icon ID. In the example de-

scribed in the present drawing, Shortcut Icon Link Data Storage Area 20659b3 stores the following data: the shortcut icon ID' Shortcut Icon#1' and the corresponding shortcut icon link data 'Shortcut Icon Link Data#1'; the shortcut icon ID' Shortcut Icon#2' and the corresponding shortcut icon link data 'Shortcut Icon Link Data#2'; the shortcut icon ID' Shortcut Icon#3' and the corresponding shortcut icon link data 'Shortcut Icon Link Data#3'; and the shortcut icon ID' Shortcut Icon#4' and the corresponding shortcut icon link data 'Shortcut Icon Link Data#4'. The foregoing software program may be any software program described in this specification.

[3973] Fig. 1445 illustrates the data stored in Selected Shortcut Icon Data Storage Area 20659b4 (Fig. 1441). As described in the present drawing, Selected Shortcut Icon Data Storage Area 20659b4 stores one or more of shortcut icon IDs. Only the shortcut icon image data of the shortcut icon IDs stored in Selected Shortcut Icon Data Storage Area 20659b4 are displayed on LCD 201 (Fig. 1). In the example described in the present drawing, Selected Shortcut Icon Data Storage Area 20659b4 stores the following data: the shortcut icon IDs 'Shortcut Icon#1', 'Shortcut Icon#2', and 'Shortcut Icon#3', which means that only the shortcut

icon image data corresponding to 'Shortcut Icon#1', 'Shortcut Icon#2', and 'Shortcut Icon#3' are displayed on LCD 201.

[3974] Fig. 1446 illustrates the software programs stored in Shortcut Icon Displaying Software Storage Area 20659c (Fig. 1440). As described in the present drawing, Shortcut Icon Displaying Software Storage Area 20659c stores Shortcut Icon Displaying Software 20659c1, Software Executing Software 20659c2, Shortcut Icon Location Data Changing Software 20659c3, and Software Executing Software 20659c4. Shortcut Icon Displaying Software 20659c1 is the software program described in Fig. 1447. Software Executing Software 20659c2 is the software program described in Fig. 1448. Shortcut Icon Location Data Changing Software 20659c3 is the software program described in Fig. 1449. Software Executing Software 20659c4 is the software program described in Fig. 1455.

[3975] Fig. 1447 illustrates Shortcut Icon Displaying Software 20659c1 stored in Shortcut Icon Displaying Software Storage Area 20659c of Communication Device 200, which displays the shortcut icon image data displayed on LCD 201 (Fig. 1) of Communication Device 200. Referring to the present drawing, CPU 211 (Fig. 1) refers to the short-

cut icon IDs stored in Selected Shortcut Icon Data Storage Area 20659b4 (Fig. 1445) to identify the shortcut icon image data to be displayed on LCD 201 (Fig. 1) (S1). CPU 211 then retrieves the shortcut icon image data of the corresponding shortcut icon IDs identified in S1 from Shortcut Icon Image Data Storage Area 20659b1 (Fig. 1442) (S2). CPU 211 further retrieves the shortcut icon location data of the corresponding shortcut icon IDs identified in S1 from Shortcut Icon Location Data Storage Area 20659b2 (Fig. 1443) (S3). CPU 211 displays on LCD 201 (Fig. 1) the shortcut icon image data thereafter (S4).

[3976] Fig. 1448 illustrates Software Executing Software 20659c2 stored in Shortcut Icon Displaying Software Storage Area 20659c of Communication Device 200, which executes the corresponding software program upon selecting the shortcut icon image data displayed on LCD 201 (Fig. 1) of Communication Device 200. Referring to the present drawing, the user of Communication Device 200 selects the shortcut icon image data displayed on LCD 201 by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) then identifies the shortcut icon ID of the shortcut icon image data selected in S1 (S2). CPU 211 identifies the shortcut icon link data stored in

Shortcut Icon Link Data Storage Area 20659b3 (Fig. 1444) from the shortcut icon ID identified in S2 (S3), and executes the corresponding software program (S4).

[3977] Fig. 1449 illustrates Shortcut Icon Location Data Changing Software 20659c3 stored in Shortcut Icon Displaying Software Storage Area 20659c of Communication Device 200, which enables the user of Communication Device 200 to change the location of the shortcut icon image data displayed on LCD 201 (Fig. 1). Referring to the present drawing, the user of Communication Device 200 selects the shortcut icon image data displayed on LCD 201 (S1). CPU 211 (Fig. 1) then identifies the shortcut icon ID of the shortcut icon image data selected in S1 (S2). The user moves the shortcut icon selected in S1 by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S3). CPU 211 then identifies the new location thereof (S4), and updates the shortcut icon location data stored in Shortcut Icon Location Data Storage Area 20659b2 (Fig. 1443) (S5).

[3978] *<<Shortcut Icon Displaying Function -- Executing Software In Host H>>*

[3979] Figs. 1450 through 1455 illustrate the implementation of the present invention wherein the user of Communication Device 200 executes the software programs stored in Host

H (Fig. 429) by selecting the shortcut icons displayed on LCD 201 (Fig. 1).

[3980] Fig. 1450 illustrates the storage areas included in Host H (Fig. 429). As described in the present drawing, Host H includes Shortcut Icon Displaying Information Storage Area H59a of which the data and the software programs stored therein are described in Fig. 1451.

[3981] Fig. 1451 illustrates the storage areas included in Shortcut Icon Displaying Information Storage Area H59a (Fig. 1450). As described in the present drawing, Shortcut Icon Displaying Information Storage Area H59a includes Shortcut Icon Displaying Data Storage Area H59b and Shortcut Icon Displaying Software Storage Area H59c. Shortcut Icon Displaying Data Storage Area H59b stores the data necessary to implement the present function on the side of Host H, such as the ones described in Figs. 1452 and 1453. Shortcut Icon Displaying Software Storage Area H59c stores the software programs necessary to implement the present function on the side of Host H, such as the ones described in Fig. 1454.

[3982] Fig. 1452 illustrates the storage area included in Shortcut Icon Displaying Data Storage Area H59b (Fig. 1451). As described in the present drawing, Shortcut Icon Displaying

Data Storage Area H59b includes Software Programs Storage Area H59b1. Software Programs Storage Area H59b1 stores the data described in Fig. 1453.

[3983] Fig. 1453 illustrates the data stored in Software Programs Storage Area H59b1 (Fig. 1452). As described in the present drawing, Software Programs Storage Area H59b1 comprises two columns, i.e., 'Software ID' and 'Software Program'. Column 'Software ID' stores the software IDs, and each software ID is an identification of the software program stored in column 'Software Program'. Column 'Software Program' stores the software programs. In the example described in the present drawing, Software Programs Storage Area H59b1 stores the following data: software ID 'Software#3' and the corresponding software program 'Software Program#3'; software ID 'Software#4' and the corresponding software program 'Software Program#4'; software ID 'Software#5' and the corresponding software program 'Software Program#5'; and software ID 'Software#6' and the corresponding software program 'Software Program#6'. Here, the software programs may be any software programs which are stored in Host H (Fig. 429) described in this specification. As another embodiment, the software programs may be any software pro-

grams stored in RAM 206 (Fig. 1) of Communication Device 200 described in this specification.

[3984] Fig. 1454 illustrates the software program stored in Shortcut Icon Displaying Software Storage Area H59c (Fig. 1451). As described in the present drawing, Shortcut Icon Displaying Software Storage Area H59c stores Software Executing Software H59c4. Software Executing Software H59c4 is the software program described in Fig. 1455.

[3985] Fig. 1455 illustrates Software Executing Software H59c4 stored in Shortcut Icon Displaying Software Storage Area H59c (Fig. 1454) of Host H (Fig. 429) and Software Executing Software 20659c4 stored in Shortcut Icon Displaying Software Storage Area 20659c (Fig. 1446) of Communication Device 200, which execute the corresponding software program upon selecting the shortcut icon image data displayed on LCD 201 (Fig. 1) of Communication Device 200. Referring to the present drawing, the user of Communication Device 200 selects the shortcut icon image data displayed on LCD 201 by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). CPU 211 (Fig. 1) then identifies the shortcut icon ID of the shortcut icon image data selected in S1 (S2). CPU 211 identifies the shortcut icon link data stored in Shortcut Icon Link Data

Storage Area 20659b3 (Fig. 1444) from the shortcut icon ID identified in S2 (S3), which is sent to Host H (S4). Upon receiving the shortcut icon link data from Communication Device 200 (S5), Host H executes the corresponding software program (S6) and produces the relevant display data, which are send to Communication Device 200 (S7). Upon receiving the relevant display data from Host H, Communication Device 200 displays the data on LCD 201 (S8).

[3986] *<<Shortcut Icon Displaying Function -- Summary>>*

[3987] (1) A communication device comprising a microphone, a speaker, a display, an input device and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and a shortcut icon displaying mode, a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, a shortcut icon representing a specific software program is displayed on said display when said shortcut icon displaying mode is implemented.

[3988] (2) Said shortcut icon is displayed on predetermined location on said display.

[3989] (3) Said shortcut icon is displayed on a new location on said display when said shortcut icon is moved by the user

of said communication device.

[3990] (4) A software program stored in a host computer which is linked to a predetermined shortcut icon is executed when said shortcut icon is selected by the user of said communication device.

[3991] *<<Task Tray Icon Displaying Function>>*

[3992] Figs. 1456 through 1470 illustrate the task tray icon displaying function which displays one or more of task tray icons on LCD 201 (Fig. 1) of Communication Device 200. The user of Communication Device 200 can identify the software programs executed in background in a convenient manner. The foregoing software programs may be any software programs described in this specification.

[3993] Fig. 1456 illustrates the task tray icons displayed on LCD 201 (Fig. 1) of Communication Device 200 by implementing the present function. Referring to the present drawing, Display Area 20160DA Includes Task Tray Icons Display Area 20660DA1 which is displayed at the lower right portion of LCD 201. Three task tray icons are displayed Task Tray Icons Display Area 20660DA1, i.e., Task Tray Icon#1, Task Tray Icon#2, and Task Tray Icon#3, by which the user of Communication Device 200 can identify the software programs executed in background in a convenient

manner, i.e., by observing Task Tray Icons Display Area 20660DA1. Three task tray icons are illustrated in the present drawing, however, only for purposes of simplifying the explanation of the present function. Therefore, as many task tray icons equivalent to the number of the software programs described in this specification may be displayed in Task Tray Icons Display Area 20660DA1, and the corresponding software programs executed in background by implementing the present function.

[3994] Fig. 1457 illustrates the storage area included in RAM 206 (Fig. 1). As described in the present drawing, RAM 206 includes Task Tray Icon Displaying Information Storage Area 20660a of which the data and the software programs stored therein are described in Fig. 1458.

[3995] Fig. 1458 illustrates the storage areas included in Task Tray Icon Displaying Information Storage Area 20660a (Fig. 1457). As described in the present drawing, Task Tray Icon Displaying Information Storage Area 20660a includes Task Tray Icon Displaying Data Storage Area 20660b and Task Tray Icon Displaying Software Storage Area 20660c. Task Tray Icon Displaying Data Storage Area 20660b stores the data necessary to implement the present function, such as the ones described in Figs.

1459. Task Tray Icon Displaying Software Storage Area 20660c stores the software programs necessary to implement the present function, such as the ones described in Fig. 1463.

[3996] Fig. 1459 illustrates the storage areas included in Task Tray Icon Displaying Data Storage Area 20660b (Fig. 1458). As described in the present drawing, Task Tray Icon Displaying Data Storage Area 20660b includes Task Tray Icon Image Data Storage Area 20660b1, Task Tray Icon Link Data Storage Area 20660b3, and Selected Task Tray Icon Data Storage Area 20660b4. Task Tray Icon Image Data Storage Area 20660b1 stores the data described in Fig. 1460. Task Tray Icon Link Data Storage Area 20660b3 stores the data described in Fig. 1461. Selected Task Tray Icon Data Storage Area 20660b4 stores the data described in Fig. 1462.

[3997] Fig. 1460 illustrates the data stored in Task Tray Icon Image Data Storage Area 20660b1 (Fig. 1459). As described in the present drawing, Task Tray Icon Image Data Storage Area 20660b1 comprises two columns, i.e., 'Task Tray Icon ID' and 'Task Tray Icon Image Data'. Column 'Task Tray Icon ID' stores the task tray icon IDs, and each task tray icon ID is the identification of the corresponding task

tray icon image data stored in column 'Task Tray Icon Image Data'. Column 'Task Tray Icon Image Data' stores the task tray icon image data, and each task tray icon image data is the image data of the task tray icon displayed on LCD 201 (Fig. 1) as described in Fig. 1456. In the example described in the present drawing, Task Tray Icon Image Data Storage Area 20660b1 stores the following data: the task tray icon ID 'Task Tray Icon#1' and the corresponding task tray icon image data 'Task Tray Icon Image Data#1'; the task tray icon ID 'Task Tray Icon#2' and the corresponding task tray icon image data 'Task Tray Icon Image Data#2'; the task tray icon ID 'Task Tray Icon#3' and the corresponding task tray icon image data 'Task Tray Icon Image Data#3'; and the task tray icon ID 'Task Tray Icon#4' and the corresponding task tray icon image data 'Task Tray Icon Image Data#4'.

[3998] Fig. 1461 illustrates the data stored in Task Tray Icon Link Data Storage Area 20660b3 (Fig. 1459). As described in the present drawing, Task Tray Icon Link Data Storage Area 20660b3 comprises two columns, i.e., 'Task Tray Icon ID' and 'Task Tray Icon Link Data'. Column 'Task Tray Icon ID' stores the task tray icon IDs described hereinbefore. Column 'Task Tray Icon Link Data' stores the task

tray icon link data, and each task tray icon link data represents the location in Communication Device 200 of the software program stored therein represented by the task tray icon of the corresponding task tray icon ID. In the example described in the present drawing, Task Tray Icon Link Data Storage Area 20660b3 stores the following data: the task tray icon ID 'Task Tray Icon#1' and the corresponding task tray icon link data 'Task Tray Icon Link Data#1'; the task tray icon ID' Task Tray Icon#2' and the corresponding task tray icon link data 'Task Tray Icon Link Data#2'; the task tray icon ID' Task Tray Icon#3' and the corresponding task tray icon link data 'Task Tray Icon Link Data#3'; and the task tray icon ID' Task Tray Icon#4' and the corresponding task tray icon link data 'Task Tray Icon Link Data#4'. The foregoing software programs may be of any software programs described in this specification.

[3999] Fig. 1462 illustrates the data stored in Selected Task Tray Icon Data Storage Area 20660b4 (Fig. 1459). As described in the present drawing, Selected Task Tray Icon Data Storage Area 20660b4 stores one or more of task tray icon IDs. Only the task tray icon image data of the task tray icon IDs stored in Selected Task Tray Icon Data Storage Area 20660b4 are displayed in Task Tray Icons Display

Area 20660DA1 (Fig. 1456). In the example described in the present drawing, Selected Task Tray Icon Data Storage Area 20660b4 stores the following data: the task tray icon IDs 'Task Tray Icon#1', 'Task Tray Icon#2', and 'Task Tray Icon#3', which means that only the task tray icon image data corresponding to 'Task Tray Icon#1', 'Task Tray Icon#2', and 'Task Tray Icon#3' are displayed in Task Tray Icons Display Area 20660DA1.

[4000] Fig. 1463 illustrates the software programs stored in Task Tray Icon Displaying Software Storage Area 20660c (Fig. 1458). As described in the present drawing, Task Tray Icon Displaying Software Storage Area 20660c stores Software Executing Software 20660c2 and Software Executing Software 20660c4. Software Executing Software 20660c2 is the software program described in Fig. 1464. Software Executing Software 20660c4 is the software program described in Fig. 1470.

[4001] Fig. 1464 illustrates Software Executing Software 20660c2 stored in Task Tray Icon Displaying Software Storage Area 20660c of Communication Device 200, which executes the corresponding software program in background and displays the corresponding task tray icon image data on LCD 201 (Fig. 1) of Communication Device 200. Referring

to the present drawing, CPU 211 (Fig. 1) refers to Selected Task Tray Icon Data Storage Area 20660b4 (Fig. 1462) (S1) to identify the task tray IDs stored therein (S2). CPU 211 identifies the task tray icon link data stored in Task Tray Icon Link Data Storage Area 20660b3 (Fig. 1461) of the corresponding task tray icon IDs identified in S2 (S3), and executes the corresponding software program (S4). CPU 211 then retrieves the task tray icon image data of the corresponding task tray icon IDs identified in S2 from Task Tray Icon Image Data Storage Area 20660b1 (Fig. 1460) (S5). CPU 211 displays the task tray icon image data in Task Tray Icons Display Area 20660DA1 (Fig. 1456) thereafter (S6).

[4002] *<<Task Tray Icon Displaying Function -- Executing Software In Host H>>*

[4003] Figs. 1465 through 1470 illustrate the implementation of the present invention wherein the software programs stored in Host H (Fig. 429) are executed.

[4004] Fig. 1465 illustrates the storage areas included in Host H (Fig. 429). As described in the present drawing, Host H includes Task Tray Icon Displaying Information Storage Area H60a of which the data and the software programs stored therein are described in Fig. 1466.

[4005] Fig. 1466 illustrates the storage areas included in Task Tray Icon Displaying Information Storage Area H60a (Fig. 1465). As described in the present drawing, Task Tray Icon Displaying Information Storage Area H60a includes Task Tray Icon Displaying Data Storage Area H60b and Task Tray Icon Displaying Software Storage Area H60c. Task Tray Icon Displaying Data Storage Area H60b stores the data necessary to implement the present function on the side of Host H, such as the ones described in Figs. 1467 and 1468. Task Tray Icon Displaying Software Storage Area H60c stores the software programs necessary to implement the present function on the side of Host H, such as the ones described in Fig. 1469.

[4006] Fig. 1467 illustrates the storage area included in Task Tray Icon Displaying Data Storage Area H60b (Fig. 1466). As described in the present drawing, Task Tray Icon Displaying Data Storage Area H60b includes Software Programs Storage Area H60b1. Software Programs Storage Area H60b1 stores the data described in Fig. 1468.

[4007] Fig. 1468 illustrates the data stored in Software Programs Storage Area H60b1 (Fig. 1467). As described in the present drawing, Software Programs Storage Area H60b1 comprises two columns, i.e., 'Software ID' and 'Software

Program'. Column 'Software ID' stores the software IDs, and each software ID is an identification of the software program stored in column 'Software Program'. Column 'Software Program' stores the software programs. In the example described in the present drawing, Software Programs Storage Area H60b1 stores the following data: software ID 'Software#3' and the corresponding software program 'Software Program#3'; software ID 'Software#4' and the corresponding software program 'Software Program#4'; software ID 'Software#5' and the corresponding software program 'Software Program#5'; and software ID 'Software#6' and the corresponding software program 'Software Program#6'. Here, the software programs may be any software programs which are stored in Host H (Fig. 429) described in this specification. As another embodiment, the software programs may be any software programs stored in RAM 206 (Fig. 1) of Communication Device 200 described in this specification.

[4008] Fig. 1469 illustrates the software program stored in Task Tray Icon Displaying Software Storage Area H60c (Fig. 1466). As described in the present drawing, Task Tray Icon Displaying Software Storage Area H60c stores Software Executing Software H60c4. Software Executing Soft-

ware H60c4 is the software program described in Fig. 1470.

[4009] Fig. 1470 illustrates Software Executing Software H60c4 stored in Task Tray Icon Displaying Software Storage Area H60c (Fig. 1469) of Host H (Fig. 429) and Software Executing Software 20660c4 stored in Task Tray Icon Displaying Software Storage Area 20660c (Fig. 1463) of Communication Device 200, which execute the corresponding software program in background and displays the corresponding task tray icon image data on LCD 201 (Fig. 1) of Communication Device 200. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 refers to Selected Task Tray Icon Data Storage Area 20660b4 (Fig. 1462) (S1) to identify the task tray IDs stored therein (S2). CPU 211 identifies the task tray icon link data stored in Task Tray Icon Link Data Storage Area 20660b3 (Fig. 1461) of the corresponding task tray icon IDs identified in S2 (S3), which is sent to Host H (S4). Upon receiving the task tray icon link data from Communication Device 200 (S5), Host H executes the corresponding software program (S6). CPU 211 then retrieves the task tray icon image data of the corresponding task tray icon IDs identified in S2 from Task Tray Icon Image Data Storage

Area 20660b1 (Fig. 1460) (S7). CPU 211 displays the task tray icon image data in Task Tray Icons Display Area 20660DA1 (Fig. 1456) thereafter (S6).

[4010] *<<Task Tray Icon Displaying Function -- Summary>>*

[4011] (1) A communication device comprising a microphone, a speaker, a display, an input device and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and a task tray icon displaying mode, a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, a task tray icon representing a specific software program is displayed on said display when said task tray icon displaying mode is implemented.

[4012] (2) Said task tray icon is displayed in a task tray icons display area.

[4013] (3) Said specific software program is executed in a host computer.

[4014] *<<Multiple Channel Processing Function>>*

[4015] Figs. 1471 through 1498 illustrates the multiple channel processing function which enables Communication Device 200 to send and receive a large amount of data in a short

period of time by increasing the upload and download speed.

[4016] Fig. 1471 illustrates the storage area included in Host H (Fig. 429). As described in the present drawing, Host H includes Multiple Channel Processing Information Storage Area H61a of which the data and the software programs stored therein are described in Fig. 1472. Here, Host H is a base station which communicates with Communication Device 200 in a wireless fashion.

[4017] Fig. 1472 illustrates the storage areas included in Multiple Channel Processing Information Storage Area H61a (Fig. 1471). As described in the present drawing, Multiple Channel Processing Information Storage Area H61a includes Multiple Channel Processing Data Storage Area H61b and Multiple Channel Processing Software Storage Area H61c. Multiple Channel Processing Data Storage Area H61b stores the data necessary to implement the present function on the side of Host H (Fig. 429), such as the ones described in Figs. 1473 through 1478. Multiple Channel Processing Software Storage Area H61c stores the software programs necessary to implement the present function on the side of Host H, such as the ones described in Fig. 1479.

[4018] Fig. 1473 illustrates the storage areas included in Multiple Channel Processing Data Storage Area H61b (Fig. 1472). As described in the present drawing, Multiple Channel Processing Data Storage Area H61b includes User Data Storage Area H61b1, Channel Number Storage Area H61b2, and Signal Type Data Storage Area H61b3. User Data Storage Area H61b1 stores the data described in Fig. 1474. Channel Number Storage Area H61b2 stores the data described in Figs. 1475 and 1476. Signal Type Data Storage Area H61b3 stores the data described in Figs. 1477 and 1478.

[4019] Fig. 1474 illustrates the data stored in User Data Storage Area H61b1 (Fig. 1473). As described in the present drawing, User Data Storage Area H61b1 comprises two columns, i.e., 'User ID' and 'User Data'. Column 'User ID' stores the user IDs, and each user ID in an identification of the user of Communication Device 200. Column 'User Data' stores the user data, and each user data represents the personal data of the user of the corresponding user ID, such as name, home address, office address, phone number, email address, fax number, age, sex, credit card number of the user of the corresponding user ID. In the example described in the present drawing, User Data

Storage Area H61b1 stores the following data: the user ID 'User#1' and the corresponding user data 'User Data#1'; the user ID 'User#2' and the corresponding user data 'User Data#2'; the user ID 'User#3' and the corresponding user data 'User Data#3'; and the user ID 'User#4' and the corresponding user data 'User Data#4'.

[4020] Fig. 1475 illustrates the data stored in Channel Number Storage Area H61b2 (Fig. 1473). As described in the present drawing, Channel Number Storage Area H61b2 comprises two columns, i.e., 'Channel ID' and 'User ID'. Column 'Channel ID' stores the channel IDs, and each channel ID is an identification of the channel which is assigned to each Communication Device 200 and through which Host H (Fig. 429) and Communication Device 200 send and receive data. Normally one channel ID is assigned to one user ID. Column 'User ID' stores the user IDs described hereinbefore. In the example described in the present drawing, Channel Number Storage Area H61b2 stores the following data: the channel ID 'Channel#1' and the user ID 'User#1'; the channel ID 'Channel#2' with no corresponding user ID stored; the channel ID 'Channel#3' and the user ID 'User#3'; and the channel ID 'Channel#4' and the user ID 'User#4'. Here, the foregoing data indi-

cates that, to communicate with Host H (Fig. 429), the channel ID 'Channel#1' is utilized by Communication Device 200 represented by the user ID 'User#1'; the channel ID 'Channel#2' is not utilized by any Communication Device 200 (i.e., vacant); the channel ID 'Channel#3' is utilized by Communication Device 200 represented by the user ID 'User#3'; and the channel ID 'Channel#4' is utilized by Communication Device 200 represented by the user ID 'User#4'.

[4021] Fig. 1476 illustrates another example of the data stored in Channel Number Storage Area H61b2 (Fig. 1475). As described in the present drawing, Channel Number Storage Area H61b2 comprises two columns, i.e., 'Channel ID' and 'User ID'. Column 'Channel ID' stores the channel IDs described hereinbefore. Column 'User ID' stores the user IDs described hereinbefore. In the example described in the present drawing, Channel Number Storage Area H61b2 stores the following data: the channel ID 'Channel#1' and the user ID 'User#1'; the channel ID 'Channel#2' and the user ID 'User#1'; the channel ID 'Channel#3' and the user ID 'User#3'; and the channel ID 'Channel#4' and the user ID 'User#4'. Here, the foregoing data indicates that, to communicate with Host H (Fig. 429), the channel ID 'Chan-

nel#1' is utilized by Communication Device 200 represented by the user ID 'User#1'; the channel ID 'Channel#2' is also utilized by Communication Device 200 represented by the user ID 'User#1'; the channel ID 'Channel#3' is utilized by Communication Device 200 represented by the user ID 'User#3'; and the channel ID 'Channel#4' is utilized by Communication Device 200 represented by the user ID 'User#4'. In sum, the foregoing data indicates that two channel IDs, i.e., 'Channel#1' and 'Channel#2' are utilized by one Communication Device 200 represented by the user ID 'User#1'.

[4022] Fig. 1477 illustrates the data stored in Signal Type Data Storage Area H61b3 (Fig. 1473). As described in the present drawing, Signal Type Data Storage Area H61b3 comprises two columns, i.e., 'Channel ID' and 'Signal Type Data'. Column 'Channel ID' stores the channel IDs described hereinbefore. Column 'Signal Type Data' stores the signal type data, and each signal type data indicates the type of signal utilized for the channel represented by the corresponding channel ID. In the example described in the present drawing, Signal Type Data Storage Area H61b3 stores the following data: the channel ID 'Channel#1' and the corresponding signal type data 'cdma2000'; the chan-

nel ID 'Channel#2' and the corresponding signal type data 'cdma2000'; the channel ID 'Channel#3' and the corresponding signal type data 'W-CDMA'; and the channel ID 'Channel#4' and the corresponding signal type data 'cdma2000'. The foregoing data indicates that the channel identified by the channel ID 'Channel#1' is assigned to the signal type data 'cdma2000'; the channel identified by the channel ID 'Channel#2' is assigned to the signal type data 'cdma2000'; the channel identified by the channel ID 'Channel#3' is assigned to the signal type data 'W-CDMA'; and the channel identified by the channel ID 'Channel#4' is assigned to the signal type data 'cdma2000'. Assuming that Communication Device 200 represented by the user ID 'User#1' utilizes the channels represented by the channel ID 'Channel#1' and 'Channel#2' as described in Fig. 1476. In the example described in the present drawing, Communication Device 200 represented by the user ID 'User#1' utilizes the signal type data 'cdma2000' for the channels represented by the channel ID 'Channel#1' and 'Channel#2' for communicating with Host H (Fig. 429).

[4023] Fig. 1478 illustrates another example of the data stored in Signal Type Data Storage Area H61b3 (Fig. 1473). As described in the present drawing, Signal Type Data Storage

Area H61b3 comprises two columns, i.e., 'Channel ID' and 'Signal Type Data'. Column 'Channel ID' stores the channel IDs described hereinbefore. Column 'Signal Type Data' stores the signal type data, and each signal type data indicates the type of signal utilized for the channel represented by the corresponding channel ID. In the example described in the present drawing, Signal Type Data Storage Area H61b3 stores the following data: the channel ID 'Channel#1' and the corresponding signal type data 'cdma2000'; the channel ID 'Channel#2' and the corresponding signal type data 'W-CDMA'; the channel ID 'Channel#3' and the corresponding signal type data 'W-CDMA'; and the channel ID 'Channel#4' and the corresponding signal type data 'cdma2000'. The foregoing data indicates that the channel identified by the channel ID 'Channel#1' is assigned to the signal type data 'cdma2000'; the channel identified by the channel ID 'Channel#2' is assigned to the signal type data 'W-CDMA'; the channel identified by the channel ID 'Channel#3' is assigned to the signal type data 'W-CDMA'; and the channel identified by the channel ID 'Channel#4' is assigned to the signal type data 'cdma2000'. Assuming that Communication Device 200 represented by the user ID 'User#1' uti-

lizes the channels represented by the channel ID 'Channel#1' and 'Channel#2' as described in Fig. 1476. In the example described in the present drawing, Communication Device 200 represented by the user ID 'User#1' utilizes the signal type data in a hybrid manner for communicating with Host H (Fig. 429), i.e., the signal type data 'cdma2000' for 'Channel#1' and the signal type data 'W-CDMA' for 'Channel#2'.

[4024] Fig. 1479 illustrates the software programs stored in Multiple Channel Processing Software Storage Area H61c (Fig. 1472). As described in the present drawing, Multiple Channel Processing Software Storage Area H61c stores Signal Type Data Detecting Software H61c1, User ID Identifying Software H61c2, Data Sending/Receiving Software H61c2a, Channel Number Adding Software H61c3, Data Sending/Receiving Software H61c3a, Signal Type Data Adding Software H61c4, and Data Sending/Receiving Software H61c4a. Signal Type Data Detecting Software H61c1 is the software program described in Figs. 1488 and 1489. User ID Identifying Software H61c2 is the software program described in Fig. 1490. Data Sending/Receiving Software H61c2a is the software program described in Figs. 1491 and 1492. Channel Number Adding Software

H61c3 is the software program described in Fig. 1493. Data Sending/Receiving Software H61c3a is the software program described in Figs. 1494 and 1495. Signal Type Data Adding Software H61c4 is the software program described in Fig. 1496. Data Sending/Receiving Software H61c4a is the software program described in Figs. 1497 and 1498.

[4025] Fig. 1480 illustrates the storage area included in RAM 206 (Fig. 1) of Communication Device 200. As described in the present drawing, RAM 206 includes Multiple Channel Processing Information Storage Area 20661a of which the data and the software programs stored therein are described in Fig. 1481.

[4026] Fig. 1481 illustrates the storage areas included in Multiple Channel Processing Information Storage Area 20661a (Fig. 1480). As described in the present drawing, Multiple Channel Processing Information Storage Area 20661a includes Multiple Channel Processing Data Storage Area 20661b and Multiple Channel Processing Software Storage Area 20661c. Multiple Channel Processing Data Storage Area 20661b stores the data necessary to implement the present function on the side of Communication Device 200 (Fig. 429), such as the ones described in Figs. 1482

through 1486. Multiple Channel Processing Software Storage Area 20661c stores the software programs necessary to implement the present function on the side of Communication Device 200, such as the ones described in Fig. 1487.

[4027] The data and software programs stored in Multiple Channel Processing Software Storage Area 20661c (Fig. 1481) are downloaded from Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[4028] Fig. 1481a illustrates the storage areas included in Multiple Channel Processing Data Storage Area 20661b (Fig. 1481). As described in the present drawing, Multiple Channel Processing Data Storage Area 20661b includes User Data Storage Area 20661b1, Channel Number Storage Area 20661b2, and Signal Type Data Storage Area 20661b3. User Data Storage Area 20661b1 stores the data described in Fig. 1482. Channel Number Storage Area 20661b2 stores the data described in Figs. 1483 and 1484. Signal Type Data Storage Area 20661b3 stores the data described in Figs. 1485 and 1486.

[4029] Fig. 1482 illustrates the data stored in User Data Storage Area 20661b1 (Fig. 1481a). As described in the present drawing, User Data Storage Area 20661b1 comprises two

columns, i.e., 'User ID' and 'User Data'. Column 'User ID' stores the user ID which is an identification of Communication Device 200. Column 'User Data' stores the user data represents the personal data of the user of Communication Device 200, such as name, home address, office address, phone number, email address, fax number, age, sex, credit card number of the user. In the example described in the present drawing, User Data Storage Area 20661b1 stores the following data: the user ID 'User#1' and the corresponding user data 'User Data#1'.

[4030] Fig. 1483 illustrates the data stored in Channel Number Storage Area 20661b2 (Fig. 1481a). As described in the present drawing, Channel Number Storage Area 20661b2 comprises two columns, i.e., 'Channel ID' and 'User ID'. Column 'Channel ID' stores the channel ID which is an identification of the channel through which Host H (Fig. 429) and Communication Device 200 send and receive data. Column 'User ID' stores the user ID described hereinbefore. In the example described in the present drawing, Channel Number Storage Area 20661b2 stores the following data: the channel ID 'Channel#1' and the corresponding user ID 'User#1'. The foregoing data indicates that, to communicate with Host H (Fig. 429), the channel ID 'Chan-

nel#1' is utilized by Communication Device 200 represented by the user ID 'User#1'.

[4031] Fig. 1484 illustrates another example of the data stored in Channel Number Storage Area 20661b2 (Fig. 1481a). As described in the present drawing, Channel Number Storage Area 20661b2 comprises two columns, i.e., 'Channel ID' and 'User ID'. Column 'Channel ID' stores the channel IDs, and each channel ID is an identification of the channel through which Host H (Fig. 429) and Communication Device 200 send and receive data. Column 'User ID' stores the user ID described hereinbefore. In the example described in the present drawing, Channel Number Storage Area 20661b2 stores the following data: the channel ID 'Channel#1' and the corresponding user ID 'User#1'; and the channel ID 'Channel#2' and the corresponding user ID 'User#2'. The foregoing data indicates that, to communicate with Host H (Fig. 429), the channel IDs of 'Channel#1' and 'Channel#2' are utilized by Communication Device 200 represented by the user ID 'User#1'.

[4032] Fig. 1485 illustrates the data stored in Signal Type Data Storage Area 20661b3 (Fig. 1481a). As described in the present drawing, Signal Type Data Storage Area 20661b3 comprises two columns, i.e., 'Channel ID' and 'Signal Type

Data'. Column 'Channel ID' stores the channel IDs described hereinbefore. Column 'Signal Type Data' stores the signal type data, and each signal type data indicates the type of signal utilized for the channel represented by the corresponding channel ID. In the example described in the present drawing, Signal Type Data Storage Area 20661b3 stores the following data: the channel ID 'Channel#1' and the corresponding signal type data 'cdma2000'; and the channel ID 'Channel#2' and the corresponding signal type data 'cdma2000'. The foregoing data indicates that the channel identified by the channel ID 'Channel#1' is assigned to the signal type data 'cdma2000'; and the channel identified by the channel ID 'Channel#2' is assigned to the signal type data 'cdma2000'. In the example described in the present drawing, Communication Device 200 represented by the user ID 'User#1' utilizes the signal type data 'cdma2000' for the channels represented by the channel ID 'Channel#1' and 'Channel#2' for communicating with Host H (Fig. 429).

[4033] Fig. 1486 illustrates another example of the data stored in Signal Type Data Storage Area 20661b3 (Fig. 1481a). As described in the present drawing, Signal Type Data Storage Area 20661b3 comprises two columns, i.e., 'Channel

ID' and 'Signal Type Data'. Column 'Channel ID' stores the channel IDs described hereinbefore. Column 'Signal Type Data' stores the signal type data, and each signal type data indicates the type of signal utilized for the channel represented by the corresponding channel ID. In the example described in the present drawing, Signal Type Data Storage Area 20661b3 stores the following data: the channel ID 'Channel#1' and the corresponding signal type data 'cdma2000'; and the channel ID 'Channel#2' and the corresponding signal type data 'W-CDMA'. The foregoing data indicates that the channel identified by the channel ID 'Channel#1' is assigned to the signal type data 'cdma2000'; and the channel identified by the channel ID 'Channel#2' is assigned to the signal type data 'W-CDMA'. In the example described in the present drawing, Communication Device 200 represented by the user ID 'User#1' utilizes the signal type data in a hybrid manner for communicating with Host H (Fig. 429), i.e., the signal type data 'cdma2000' for 'Channel#1' and the signal type data 'W-CDMA' for 'Channel#2'.

[4034] Fig. 1487 illustrates the software programs stored in Multiple Channel Processing Software Storage Area 20661c (Fig. 1481). As described in the present drawing, Multiple

Channel Processing Software Storage Area 20661c stores Signal Type Data Detecting Software 20661c1, User ID Identifying Software 20661c2, Data Sending/Receiving Software 20661c2a, Channel Number Adding Software 20661c3, Data Sending/Receiving Software 20661c3a, Signal Type Data Adding Software 20661c4, and Data Sending/Receiving Software 20661c4a. Signal Type Data Detecting Software 20661c1 is the software program described in Figs. 1488 and 1489. User ID Identifying Software 20661c2 is the software program described in Fig. 1490. Data Sending/Receiving Software 20661c2a is the software program described in Figs. 1491 and 1492. Channel Number Adding Software 20661c3 is the software program described in Fig. 1493. Data Sending/Receiving Software 20661c3a is the software program described in Figs. 1494 and 1495. Signal Type Data Adding Software 20661c4 is the software program described in Fig. 1496. Data Sending/Receiving Software 20661c4a is the software program described in Figs. 1497 and 1498.

[4035] Fig. 1488 illustrates Signal Type Data Detecting Software H61c1 (Fig. 1479) of Host H (Fig. 429) and Signal Type Data Detecting Software 20661c1 (Fig. 1487) of Communication Device 200, which detect the signal type utilized

for the communication between Host H and Communication Device 200 from the ones described in Figs. 493a through 515 and from any signal type categorized as 2G, 3G, and 4G. The detection of the signal type is implemented by Host H in the present embodiment. As described in the present drawing, Host H detects the signal type (S1), and stores the signal type data in Signal Type Data Storage Area H61b3 (Fig. 1477) at the default channel number (in the present example, Channel#1) (S2). Host H then sends the signal type data to Communication Device 200 (S3). Upon receiving the signal type data from Host H (S4), Communication Device 200 stores the signal type data in Signal Type Data Storage Area 20661b3 (Fig. 1485) at the default channel number (in the present example, Channel#1) (S5).

[4036] Fig. 1489 illustrates another embodiment of Signal Type Data Detecting Software H61c1 (Fig. 1479) of Host H (Fig. 429) and Signal Type Data Detecting Software 20661c1 (Fig. 1487) of Communication Device 200, which detect the signal type utilized for the communication between Host H and Communication Device 200 from the ones described in Figs. 493a through 515 and from any signal type categorized as 2G, 3G, and 4G. The detection of the

signal type is implemented by Communication Device 200 in the present embodiment. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 detects the signal type (S1), and stores the signal type data in Signal Type Data Storage Area 20661b3 (Fig. 1485) at the default channel number (in the present example, Channel#1) (S2). CPU 211 then sends the signal type data to Host H (S3). Upon receiving the signal type data from Communication Device 200 (S4), Host H stores the signal type data in Signal Type Data Storage Area H61b3 (Fig. 1477) at the default channel number (in the present example, Channel#1) (S5).

[4037] Fig. 1490 illustrates User ID Identifying Software H61c2 (Fig. 1479) of Host H (Fig. 429) and User ID Identifying Software 20661c2 (Fig. 1487) of Communication Device 200, which identify the user ID of the corresponding Communication Device 200. As described in the present drawing, Communication Device 200 sends the user ID to Host H (S1). Upon receiving the User ID from Communication Device 200 (S2), Host H identifies the default channel number (in the present example, Channel#1) for Communication Device 200 (S3), and stores the User ID in Channel Number Storage Area H61b2 (Fig. 1475) at the channel

number identified in S3 (S4).

[4038] Fig. 1491 illustrates Data Sending/Receiving Software H61c2a (Fig. 1479) of Host H (Fig. 429) and Data Sending/Receiving Software 20661c2a (Fig. 1487) of Communication Device 200 by which Host H sends data to Communication Device 200. As described in the present drawing, Host H retrieves the default channel number (in the present example, Channel#1) from Channel Number Storage Area H61b2 (Fig. 1475) (S1), and sends data (e.g., audiovisual data and alphanumeric data) to Communication Device 200 through the default channel number (in the present example, Channel#1) retrieved in S1 (S2). Communication Device 200 receives the data (e.g., audiovisual data and alphanumeric data) from Host H through the same channel number (S3).

[4039] Fig. 1492 illustrates another embodiment of Data Sending/Receiving Software H61c2a (Fig. 1479) of Host H (Fig. 429) and Data Sending/Receiving Software 20661c2a (Fig. 1487) of Communication Device 200 by which Communication Device 200 sends data (e.g., audiovisual data and alphanumeric data) to Host H. As described in the present drawing, Communication Device 200 retrieves the default channel number (in the present example, Channel#1) from

Channel Number Storage Area 20661b2 (Fig. 1483) (S1), and sends data (e.g., audiovisual data and alphanumeric data) to Host H through the default channel number (in the present example, Channel#1) retrieved in S1 (S2). Host H receives the data (e.g., audiovisual data and alphanumeric data) from Communication Device 200 through the same channel number (S3).

[4040] Fig. 1493 illustrates Channel Number Adding Software H61c3 (Fig. 1479) of Host H (Fig. 429) and Channel Number Adding Software 20661c3 (Fig. 1487) of Communication Device 200, which add another channel to increase the download and/or upload speed of Communication Device 200. As described in the present drawing, Communication Device 200 sends a channel number adding request to Host H (S1). Upon receiving the channel number adding request from Communication Device 200 (S2), Host H checks the availability in the same signal type data (S3). Assuming that vacancy is found in the same signal type data, Host H selects a new channel number (in the present example, Channel#2) from the available channel numbers for Communication Device 200 (S4). Host H stores the user ID of Communication Device 200 in Channel Number Storage Area H61b2 (Fig. 1475) at new chan-

nel number (in the present example, Channel#2) selected in S4 (S5). Host H then sends the new channel number (in the present example, Channel#2) selected in S4 to Communication Device 200 (S6). Upon receiving the new channel number (in the present example, Channel#2) from Host H (S7), Communication Device 200 stores the new channel number (in the present example, Channel#2) in Channel Number Storage Area 20661b2 (Fig. 1483) (S8). As another embodiment, instead of Host H adding a new channel number by receiving a channel number adding request from Communication Device 200, Host H may do so in its own initiative.

[4041] Fig. 1494 illustrates Data Sending/Receiving Software H61c3a (Fig. 1479) of Host H (Fig. 429) and Data Sending/Receiving Software 20661c3a (Fig. 1487) of Communication Device 200 by which Host H sends data to Communication Device 200 by increasing the download speed. As described in the present drawing, Host H retrieves the channel numbers (in the present example, Channel#1 and #2) from Channel Number Storage Area H61b2 (Fig. 1475) of the corresponding user ID (in the present example, User#1) (S1). Host H splits the data (e.g., audiovisual data and alphanumeric data) to be sent to Communication De-

vice 200 to the First Data and the Second Data (S2). Host H sends the First Data to Communication Device 200 through Channel#1 (S3), and sends the Second Data to Communication Device 200 through Channel#2 (S4). Communication Device 200 receives the First Data from Host H through Channel#1 (S5), and receives the Second Data from Host H through Channel#2 (S6). Communication Device 200 merges the First Data and the Second Data thereafter (S7).

[4042] Fig. 1495 illustrates Data Sending/Receiving Software H61c3a (Fig. 1479) of Host H (Fig. 429) and Data Sending/Receiving Software 20661c3a (Fig. 1487) of Communication Device 200 by which Communication Device 200 sends data to Host H by increasing the upload speed. As described in the present drawing, Communication Device 200 retrieves the channel numbers (in the present example, Channels #1 and #2) from Channel Number Storage Area 20661b2 (Fig. 1483) (S1). Communication Device 200 splits the data (e.g., audiovisual data and alphanumeric data) to be sent to Host H to the Third Data and the Fourth Data (S2). Communication Device 200 sends the Third Data to Host H through Channel#1 (S3), and sends the Fourth Data to Host H through Channel#2 (S4). Host H

receives the Third Data from Communication Device 200 through Channel#1 (S5), and receives the Fourth Data from Communication Device 200 through Channel#2 (S6). Host H merges the Third Data and the Fourth Data thereafter (S7).

[4043] Fig. 1496 illustrates Signal Type Data Adding Software H61c4 (Fig. 1479) of Host H (Fig. 429) and Signal Type Data Adding Software 20661c4 (Fig. 1487) of Communication Device 200, which add new channel in different signal type if no available channel is found in the same signal type in S3 of Fig. 1493. As described in the present drawing, Host H checks the availability in other signal type data (S1). Assuming that an available new channel is found in W-CDMA. Host H selects a new channel number (in the present example, Channel#2) In Signal Type Data Storage Area H61b3 (Fig. 1478) for Communication Device 200 (S2). Host H stores the user ID (in the present example, User#1) in Channel Number Storage Area H61b2 (Fig. 1476) at new channel number selected in S2 (in the present example, Channel#2) (S3). Host H stores the signal type data (in the present example, W-CDMA) in Signal Type Data Storage Area H61b3 (Fig. 1478) at new channel number selected in S2 (in the present example, Chan-

nel#2) (S4). Host H sends the new channel number (in the present example, Channel#2) and the new signal type data (in the present example, W-CDMA) to Communication Device 200 (S5). Communication Device 200 receives the new channel number (in the present example, Channel#2) and the new signal type data (in the present example, W-CDMA) from Host H (S6). Communication Device 200 stores the new channel number (in the present example, Channel#2) in Channel Number Storage Area 20661b2 (Fig. 1484) (S7). Communication Device 200 (in the present example, W-CDMA) in Signal Type Data Storage Area 20661b3 (Fig. 1486) (S8).

[4044] Fig. 1497 illustrates Data Sending/Receiving Software H61c4a (Fig. 1479) of Host H (Fig. 429) and Data Sending/Receiving Software 20661c4a (Fig. 1487) of Communication Device 200 by which Host H sends data to Communication Device 200 by increasing the download speed. As described in the present drawing, Host H retrieves the channel numbers (in the present example, Channel#1 and #2) from Channel Number Storage Area H61b2 (Fig. 1476) of the corresponding user ID (in the present example, User#1) (S1). Host H splits the data (e.g., audiovisual data and alphanumeric data) to be sent to Communication De-

vice 200 to the First Data and the Second Data (S2). Host H sends the First Data to Communication Device 200 through Channel#1 in cdma2000 (S3), and sends the Second Data to Communication Device 200 through Channel#2 in W-CDMA (S4). Communication Device 200 receives the First Data from Host H through Channel#1 in cdma2000 (S5), and receives the Second Data from Host H through Channel#2 in W-CDMA (S6). Communication Device 200 merges the First Data and the Second Data thereafter (S7).

[4045] Fig. 1498 illustrates Data Sending/Receiving Software H61c4a (Fig. 1479) of Host H (Fig. 429) and Data Sending/Receiving Software 20661c4a (Fig. 1487) of Communication Device 200 by which Communication Device 200 sends data to Host H by increasing the upload speed. As described in the present drawing, Communication Device 200 retrieves the channel numbers (in the present example, Channel#1 and #2) from Channel Number Storage Area 20661b2 (Fig. 1484) (S1). Communication Device 200 splits the data (e.g., audiovisual data and alphanumeric data) to be sent to Host H to the Third Data and the Fourth Data (S2). Communication Device 200 sends the Third Data to Host H through Channel#1 in cdma2000

(S3), and sends the Fourth Data to Host H through Channel#2 in W-CDMA (S4). Host H receives the Third Data from Communication Device 200 through Channel#1 in cdma2000 (S5), and receives the Fourth Data from Communication Device 200 through Channel#2 in W-CDMA (S6). Host H merges the Third Data and the Fourth Data thereafter (S7).

[4046] As another embodiment, the present function may be utilized for processing other sets of combination of the signals, such as the 2G signal and the 3G signal. In order to implement this embodiment, the term 'cdma2000' is substituted by '2G' and the term 'W-CDMA' is substituted by '3G' in the explanation set out hereinbefore for purposes of implementing the present embodiment. Here, the 2G signal may be of any type of signal categorized as 2G, including, but not limited to cdmaOne, GSM, and D-AMPS; the 3G signal may be of any type of signal categorized as 3G, including, but not limited to cdma2000, W-CDMA, and TDS-CDMA.

[4047] As another embodiment, the present function may be utilized for processing other sets of combination of the signals, such as the 3G signal and the 4G signal. In order to implement this embodiment, the term 'cdma2000' is sub-

stituted by '3G' and the term 'W-CDMA' is substituted by '4G' in the explanation set out hereinbefore for purposes of implementing the present embodiment. Here, the 3G signal may be of any type of signal categorized as 3G, including, but not limited to cdma2000, W-CDMA, and TDS-CDMA, and the 4G signal may be of any type of signal categorized as 4G.

[4048] As another embodiment, the present function may be utilized for processing the first type of 4G signal and the second type of 4G signal. In order to implement this embodiment, the term 'cdma2000' is substituted by 'the first type of 4G signal' and the term 'W-CDMA' is substituted by 'the second type of 4G signal' for purposes of implementing the present embodiment. Here, the first type of 4G signal and the second type of 4G signal may be of any type of signal categorized as 4G.

[4049] As another embodiment, the present function may be utilized for processing the 2G signal and the 3G signal. In order to implement this embodiment, the term 'cdma2000' is substituted by 'the 2G signal' and the term 'W-CDMA' is substituted by 'the 3G signal' for purposes of implementing the present embodiment. Here, the 2G signal may be of any type of signal categorized as 2G, in-

cluding, but not limited to cdmaOne, GSM, and D-AMPS, and the 3G signal may be of any type of signal categorized as 3G, including, but not limited to cdma2000, W-CDMA, and TDS-CDMA.

[4050] As another embodiment, the present function may be utilized for processing the first type of 2G signal and the second type of 2G signal. In order to implement this embodiment, the term 'cdma2000' is substituted by 'the first type of 2G signal' and the term 'W-CDMA' is substituted by 'the second type of 2G signal' for purposes of implementing the present embodiment. Here, the first type of 2G signal and the second type of 2G signal may be of any type of signal categorized as 2G, including, but not limited to cdmaOne, GSM, and D-AMPS.

[4051] In sum, the present function described hereinbefore may be utilized for processing any combination of any type of signals.

[4052] For the avoidance of doubt, the multiple signal processing function (described in Figs. 493a through 515) may be utilized while implementing the present function.

[4053] For the avoidance of doubt, all software programs described hereinbefore to implement the present function may be executed solely by CPU 211 (Fig. 1) or by Signal

Processor 208 (Fig. 1), or by both CPU 211 and Signal Processor 208.

[4054] *<<Multiple Channel Processing Function -- Summary>>*

[4055] (1) A communication device comprising a microphone, a speaker, a display, an input device and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and a multiple channel processing mode, a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, a data is sent via a plurality of channels when said multiple channel processing mode is implemented.

[4056] (2) The communication device of the summary (1) thereby enabling said communication device to send and receive data in a shorter period of time when said multiple channel processing mode is implemented.

[4057] (3) The communication device of the summary (1), wherein said plurality of channels comprises a first channel and a second channel wherein said first channel is established on first Signal Type Data and said second channel is established on second Signal Type Data.

[4058] (4) The communication device of the summary (1), wherein said plurality of channels comprises a first chan-

nel and a second channel wherein said first channel is established on cdma2000 and said second channel is established on W-CDMA.

[4059] (5) A communication device of the summary (1) wherein communication device is capable to process email data.

[4060] (6) A communication device of the summary (1) wherein said communication device is capable to process voice communication data.

[4061] (7) A communication device of the summary (1) wherein said communication device is capable to process email data and voice communication data.

[4062] *<<Solar Battery Charging Function>>*

[4063] Fig. 1499 illustrates the storage area included in RAM 206 (Fig. 1). As described in the present drawing, RAM 206 includes Solar Battery Charging Information Storage Area 20662a of which the data and the software programs stored therein are described in Fig. 1500.

[4064] Fig. 1500 illustrates the storage areas included in Solar Battery Charging Information Storage Area 20662a (Fig. 1499). As described in the present drawing, Solar Battery Charging Information Storage Area 20662a includes Solar Battery Charging Data Storage Area 20662b and Solar Battery Charging Software Storage Area 20662c. Solar Battery

Charging Data Storage Area 20662b stores the data necessary to implement the present function, such as the ones described in Figs. 1501 through 1504. Solar Battery Charging Software Storage Area 20662c stores the software programs necessary to implement the present function, such as the ones described in Fig. 1505.

[4065] Fig. 1501 illustrates the storage areas included in Solar Battery Charging Data Storage Area 20662b (Fig. 1500). As described in the present drawing, Solar Battery Charging Data Storage Area 20662b includes Solar Battery Data Storage Area 20662b1, Battery Image Data Storage Area 20662b2, and Battery Sound Data Storage Area 20662b3. Solar Battery Data Storage Area 20662b1 stores the data described in Fig. 1502. Battery Image Data Storage Area 20662b2 stores the data described in Fig. 1503. Battery Sound Data Storage Area 20662b3 stores the data described in Fig. 1504.

[4066] Fig. 1502 illustrates the data stored in Solar Battery Data Storage Area 20662b1 (Fig. 1501). As described in the present drawing, Solar Battery Data Storage Area 20662b1 stores the solar battery data. Here, the solar battery data is the data which indicates the amount of battery left in Battery 230 (Fig. 467).

[4067] Fig. 1503 illustrates the data stored in Battery Image Data Storage Area 20662b2 (Fig. 1501). As described in the present drawing, Battery Image Data Storage Area 20662b2 comprises two columns, i.e., 'Battery Image ID' and 'Battery Image Data'. Column 'Battery Image ID' stores the battery image IDs, and each battery image ID in an identification of the corresponding battery image data stored in column 'Battery Image Data'. Column 'Battery Image Data' stores the battery image data, and each battery image data is an image data designed to be displayed on upper left corner of LCD 201 (Fig. 1) to indicate the amount of battery left in Battery 230 (Fig. 467). In the example described in the present drawing, Battery Image Data Storage Area 20662b2 stores the following data: battery image ID 'Battery Image#1' and the corresponding battery image data 'Battery Image Data#1'; battery image ID 'Battery Image#2' and the corresponding battery image data 'Battery Image Data#2'; battery image ID 'Battery Image#3' and the corresponding battery image data 'Battery Image Data#3'; battery image ID 'Battery Image#4' and the corresponding battery image data 'Battery Image Data#4'; and battery image ID 'Battery Image#5' and the corresponding battery image data 'Battery Image Data#5'. Here,

Battery Image Data#1 is an image data representing three bars; Battery Image Data#2 is an image data representing two bars; Battery Image Data#3 is an image data representing one bar; Battery Image Data#4 is an image data representing no bars; Battery Image Data#5 is an image data representing that Communication Device 200 is currently charging Battery 230 (Fig. 467) via Solar Panel 229 (Fig. 467) by implementing the present function. Battery Image Data#1 is displayed when the remaining amount of battery is over 75% and 100% or less; Battery Image Data#2 is displayed when the remaining amount of battery is over 50% and 75% or less; Battery Image Data#3 is displayed when the remaining amount of battery is over 25% and 50% or less; and Battery Image Data#4 is displayed when the remaining amount of battery is 0% or over and 25% or less. Battery Image Data#5 is displayed when Communication Device 200 is currently charging Battery 230 (Fig. 467) via Solar Panel 229 (Fig. 467) by implementing the present function.

[4068] Fig. 1504 illustrates the data stored in Battery Sound Data Storage Area 20662b3 (Fig. 1501). As described in the present drawing, Battery Sound Data Storage Area 20662b3 comprises two columns, i.e., 'Battery Sound ID'

and 'Battery Sound Data'. Column 'Battery Sound ID' stores the battery sound IDs, and each battery sound ID is an identification of the corresponding battery sound data stored in column 'Battery Sound Data'. Column 'Battery Sound Data' stores the battery sound data, and each battery sound data is a sound data designed to be output from Speaker 216 (Fig. 1) to indicate the amount of battery left in Battery 230 (Fig. 467). In the example described in the present drawing, Battery Sound Data Storage Area 20662b3 stores the following data: the battery sound ID 'Battery Sound#1' and the corresponding battery sound data 'Battery Sound Data#1'; the battery sound ID 'Battery Sound#2' and the corresponding battery sound data 'Battery Sound Data#2'; the battery sound ID 'Battery Sound#3' and the corresponding battery sound data 'Battery Sound Data#3'; and the battery sound ID 'Battery Sound#4' and the corresponding battery sound data 'Battery Sound Data#4'. Here, Battery Sound Data#1 is a sound data representing four beeps; Battery Sound Data#2 is a sound data representing three beeps; Battery Sound Data#3 is a sound data representing two beeps; and Battery Sound Data#4 is a sound data representing one beep. Battery Sound Data#1 is output when the re-

maining amount of battery is over 75% and 100% or less; Battery Sound Data#2 is output when the remaining amount of battery is over 50% and 75% or less; Battery Sound Data#3 is output when the remaining amount of battery is over 25% and 50% or less; Battery Sound Data#4 is output when the remaining amount of battery is 0% or over and 25% or less.

[4069] Fig. 1505 illustrates the software programs stored in Solar Battery Charging Software Storage Area 20662c (Fig. 1500). As described in the present drawing, Solar Battery Charging Software Storage Area 20662c stores Solar Battery Data Checking Software 20662c1, Battery Image Data Displaying Software 20662c2, Battery Charging Software 20662c3, and Battery Charge Indicating Software 20662c4. Solar Battery Data Checking Software 20662c1 is the software program described in Fig. 1506. Battery Image Data Displaying Software 20662c2 is the software program described in Fig. 1507. Battery Charging Software 20662c3 is the software program described in Fig. 1508. Battery Charge Indicating Software 20662c4 is the software program described in Fig. 1509.

[4070] Fig. 1506 illustrates Solar Battery Data Checking Software 20662c1 (Fig. 1505) of Communication Device 200, which

checks the remaining amount of battery. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 periodically checks the remaining amount of battery by referring to the solar battery data stored in Solar Battery Data Storage Area 20662b1 (Fig. 1502) (S1). For example, assume that the remaining amount is 30%. Then CPU 211 updates the solar battery data stored in Solar Battery Data Storage Area 20662b1 (Fig. 1502) to the data indicating that the remaining amount is 30% (S2).

[4071] Fig. 1507 illustrates Battery Image Data Displaying Software 20662c2 (Fig. 1505) of Communication Device 200, which displays the relevant battery image data on LCD 201 (Fig. 1). As described in the present drawing, CPU 211 (Fig. 1) periodically checks the remaining amount of battery by referring to the solar battery data stored in Solar Battery Data Storage Area 20662b1 (Fig. 1502) (S1). CPU 211 then determines the battery image data to be displayed on LCD 201 (S2). Battery Image Data#1 stored in Battery Image Data Storage Area 20662b2 (Fig. 1503) is displayed when the remaining amount of battery is over 75% and 100% or less; Battery Image Data#2 is displayed when the remaining amount of battery is over 50% and 75% or less; Battery Image Data#3 is displayed when the

remaining amount of battery is over 25% and 50% or less; and Battery Image Data#4 is displayed when the remaining amount of battery is 0% or over and 25% or less. CPU 211 displays the battery image data on LCD 201 determined in S2 thereafter (S3). Assume that the remaining amount of battery is determined as 30% in S1. Then CPU 211 determines Battery Image Data#3 as the battery image data to be displayed in S2, and retrieves from Battery Image Data Storage Area 20662b2 (Fig. 1503) and displays the data on LCD 201 in S3. As another embodiment, CPU 211 may retrieve the relevant battery sound data from Battery Sound Data Storage Area 20662b3 Fig. (1504) and output from Speaker 216 (Fig. 1) when displaying the battery image data on LCD 201. Namely, Battery Sound Data#1 is output from Speaker 216 when Battery Image Data#1 is displayed on LCD 201; Battery Sound Data# is output from Speaker 216 when Battery Image Data#2 is displayed on LCD 201; Battery Sound Data# is output from Speaker 216 when Battery Image Data#3 is displayed on LCD 201; and Battery Sound Data# is output from Speaker 216 when Battery Image Data#4 is displayed on LCD 201.

[4072] Fig. 1508 illustrates Battery Charging Software 20662c3

(Fig. 1505) of Communication Device 200, which charges Battery 230 (Fig. 467) via Solar Panel 229 (Fig. 467). As described in the present drawing, CPU 211 (Fig. 1) periodically checks the remaining amount of battery by referring to the solar battery data stored in Solar Battery Data Storage Area 20662b1 (Fig. 1502) (S1). If the remaining amount is 75% or less (S2), CPU 211 charges Battery 230 (Fig. 467) via Solar Panel 229 (Fig. 467) until it is fullly charged (S3). Assume that the remaining amount of battery is determined as 30% in S1. Since 30% is below the criteria of 75% in S2, CPU 211 charges Battery 230 (Fig. 467) via Solar Panel 229 (Fig. 467) until it is fullly charged in S3.

[4073] Fig. 1509 illustrates Battery Charge Indicating Software 20662c4 (Fig. 1505) of Communication Device 200, which displays the battery image data indicating that Battery 230 (Fig. 467) is currently charged via Solar Panel 229 (Fig. 467) on LCD 201 (Fig. 1). As described in the present drawing, CPU 211 (Fig. 1) periodically checks the charging status by referring to the activitiy of Battery Charging Software 20662c3 (Fig. 1508) (S1). If Battery Charging Software 20662c3 is active, i.e., Charge Battery 230 is currently being charged via Solar Panel 229 (S2), CPU 211

displays Battery Image Data#5 On LCD 201 (Fig. 1) (S3).

[4074] *<<Solar Battery Charging Function -- Summary>>*

[4075] A communication device comprising a microphone, a speaker, a display, an input device, a battery, a solar system, and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and a solar battery charging mode, a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, said battery is charged by utilizing said solar system when said solar battery charging mode is implemented.

[4076] *<<OS Updating Function>>*

[4077] Figs. 1510 through 1575 illustrate the OS updating function which updates the operating system of Communication Device 200 in a wireless fashion. In other words, Communication Device 200 downloads the portion of the operating system of the latest version from Host H (Fig. 429) via Antenna 218 (Fig. 1).

[4078] Fig. 1510 illustrates the storage areas included in RAM 206 (Fig. 1). As described in the present drawing, RAM 206 includes Operating System 20663OS of which the

data stored therein are described in Figs. 1511 and 1512, and OS Updating Information Storage Area 20663a of which the data and the software programs stored therein are described in Fig. 1513.

[4079] Figs. 1511 and 1512 illustrate the data stored in Operating System 20663OS (Fig. 1510). As described in the present drawing, Operating System 20663OS includes Battery Controller 20663OSa, CCD Unit Controller 20663OSb, Flash Light Unit Controller 20663OSc, Indicator Controller 20663OSd, Input Device Controller 20663OSe, LCD Controller 20663OSf, LED Controller 20663OSg, Memory Card Interface Controller 20663OSh, Microphone Controller 20663OSi, Photometer Controller 20663OSj, RAM Controller 20663OSk, ROM Controller 20663OSl, Signal Processor Controller 20663OSm, Signal Processor Controller 20663OSn, Solar Panel Controller 20663OSo, Speaker Controller 20663OSp, Vibrator Controller 20663OSq, Video Processor Controller 20663OSr, Wireless Receiver Controller 20663OSs, Wireless Receiver Controller 20663OSt, Wireless Receiver Controller 20663OSu, Wireless Transmitter Controller 20663OSv, Wireless Transmitter Controller 20663OSw, and Wireless Transmitter Controller 20663OSx. Battery Controller

20663OSa is a controller which controls Battery 230 (Fig. 467). CCD Unit Controller 20663OSb is a controller which controls CCD Unit 214 (Fig. 467). Flash Light Unit Controller 20663OSc is a controller which controls Flash Light Unit 220 (Fig. 467). Indicator Controller 20663OSd is a controller which controls Indicator 212 (Fig. 467). Input Device Controller 20663OSe is a controller which controls Input Device 210 (Fig. 467). LCD Controller 20663OSf is a controller which controls LCD 201 (Fig. 467). LED Controller 20663OSg is a controller which controls LED 219 (Fig. 467). Memory Card Interface Controller 20663OSh is a controller which controls Memory Card Interface 221 (Fig. 467). Microphone Controller 20663OSi is a controller which controls Microphone 215 (Fig. 467). Photometer Controller 20663OSj is a controller which controls Photometer 232 (Fig. 467). RAM Controller 20663OSk is a controller which controls RAM 206 (Fig. 467). ROM Controller 20663OSl is a controller which controls ROM 207 (Fig. 467). Signal Processor Controller 20663OSm is a controller which controls Signal Processor 205 (Fig. 467). Signal Processor Controller 20663OSn is a controller which controls Signal Processor 208 (Fig. 467). Solar Panel Controller 20663OSo is a controller which controls Solar

Panel 229 (Fig. 467). Speaker Controller 20663OSp is a controller which controls Speaker 216L (Fig. 467). Vibrator Controller 20663OSq is a controller which controls Vibrator 217 (Fig. 467). Video Processor Controller 20663OSr is a controller which controls Video Processor 202 (Fig. 467). Wireless Receiver Controller 20663OSs is a controller which controls Wireless Receiver 224 (Fig. 467). Wireless Receiver Controller 20663OSt is a controller which controls Wireless Receiver 225 (Fig. 467). Wireless Receiver Controller 20663OSu is a controller which controls Wireless Receiver 226 (Fig. 467). Wireless Transmitter Controller 20663OSv is a controller which controls Wireless Transmitter 222 (Fig. 467). Wireless Transmitter Controller 20663OSw is a controller which controls Wireless Transmitter 223 (Fig. 467). Wireless Transmitter Controller 20663OSx is a controller which controls Wireless Transmitter 227 (Fig. 467). For the avoidance of doubt, the data stored in Operating System 20663OS are illustrative, and other types of data, which are updated by implementing the present funciton, are also stored therein, such as DLLs, drivers, security implementing program.

[4080] Fig. 1513 illustrates the storage areas included in OS Updating Information Storage Area 20663a (Fig. 1510). As

described in the present drawing, OS Updating Information Storage Area 20663a includes OS Updating Data Storage Area 20663b and OS Updating Software Storage Area 20663c. OS Updating Data Storage Area 20663b stores the data necessary to implement the present function on the side of Communication Device 200, such as the ones described in Fig. 1514. OS Updating Software Storage Area 20663c stores the software programs necessary to implement the present function on the side of Communication Device 200, such as the ones described in Fig. 1517 and 1518.

[4081] The software programs stored in OS Updating Software Storage Area 20663c (Fig. 1513) are downloaded from Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[4082] Fig. 1514 illustrates the storage area included in OS Updating Data Storage Area 20663b (Fig. 1513). As described in the present drawing, OS Updating Data Storage Area 20663b includes OS Version Data Storage Area 20663b1. OS Version Data Storage Area 20663b1 stores the data described in Figs. 1515 and 1516.

[4083] Figs. 1515 and 1516 illustrate the data stored in OS Version Data Storage Area 20663b1 (Fig. 1514). As described

in the present drawing, OS Version Data Storage Area 20663b1 includes Battery Controller Version Data 20663b1a, CCD Unit Controller Version Data 20663b1b, Flash Light Unit Controller Version Data 20663b1c, Indicator Controller Version Data 20663b1d, Input Device Controller Version Data 20663b1e, LCD Controller Version Data 20663b1f, LED Controller Version Data 20663b1g, Memory Card Interface Controller Version Data 20663b1h, Microphone Controller Version Data 20663b1i, Photometer Controller Version Data 20663b1j, RAM Controller Version Data 20663b1k, ROM Controller Version Data 20663b1l, Signal Processor Controller Version Data 20663b1m, Signal Processor Controller Version Data 20663b1n, Solar Panel Controller Version Data 20663b1o, Speaker Controller Version Data 20663b1p, Vibrator Controller Version Data 20663b1q, Video Processor Controller Version Data 20663b1r, Wireless Receiver Controller Version Data 20663b1s, Wireless Receiver Controller Version Data 20663b1t, Wireless Receiver Controller Version Data 20663b1u, Wireless Transmitter Controller Version Data 20663b1v, Wireless Transmitter Controller Version Data 20663b1w, and Wireless Transmitter Controller Version Data 20663b1x. Battery Controller Version Data

20663b1a is the version data representing the current version of Battery Controller 20663OSa (Fig. 1511). CCD Unit Controller Version Data 20663b1b is the version data representing the current version of CCD Unit Controller 20663OSb (Fig. 1511). Flash Light Unit Controller Version Data 20663b1c is the version data representing the current version of Flash Light Unit Controller 20663OSc (Fig. 1511). Indicator Controller Version Data 20663b1d is the version data representing the current version of Indicator Controller 20663OSd (Fig. 1511). Input Device Controller Version Data 20663b1e is the version data representing the current version of Input Device Controller 20663OSe (Fig. 1511). LCD Controller Version Data 20663b1f is the version data representing the current version of LCD Controller 20663OSf (Fig. 1511). LED Controller Version Data 20663b1g is the version data representing the current version of LED Controller 20663OSg (Fig. 1511). Memory Card Interface Controller Version Data 20663b1h is the version data representing the current version of Memory Card Interface Controller 20663OSh (Fig. 1511). Microphone Controller Version Data 20663b1i is the version data representing the current version of Microphone Controller 20663OSi (Fig. 1511). Photometer Controller Ver-

sion Data 20663b1j is the version data representing the current version of Photometer Controller 20663OSj (Fig. 1511). RAM Controller Version Data 20663b1k is the version data representing the current version of RAM Controller 20663OSk (Fig. 1511). ROM Controller Version Data 20663b1l is the version data representing the current version of ROM Controller 20663OSl (Fig. 1511). Signal Processor Controller Version Data 20663b1m is the version data representing the current version of Signal Processor Controller 20663OSm (Fig. 1512). Signal Processor Controller Version Data 20663b1n is the version data representing the current version of Signal Processor Controller 20663OSn (Fig. 1512). Solar Panel Controller Version Data 20663b1o is the version data representing the current version of Solar Panel Controller 20663OSo (Fig. 1512). Speaker Controller Version Data 20663b1p is the version data representing the current version of Speaker Controller 20663OSp (Fig. 1512). Vibrator Controller Version Data 20663b1q is the version data representing the current version of Vibrator Controller 20663OSq (Fig. 1512). Video Processor Controller Version Data 20663b1r is the version data representing the current version of Video Processor Controller 20663OSr (Fig. 1512). Wireless Re-

ceiver Controller Version Data 20663b1s is the version data representing the current version of Wireless Receiver Controller 20663OSs (Fig. 1512). Wireless Receiver Controller Version Data 20663b1t is the version data representing the current version of Wireless Receiver Controller 20663OSt (Fig. 1512). Wireless Receiver Controller Version Data 20663b1u is the version data representing the current version of Wireless Receiver Controller 20663OSu (Fig. 1512). Wireless Transmitter Controller Version Data 20663b1v is the version data representing the current version of Wireless Transmitter Controller 20663OSv (Fig. 1512). Wireless Transmitter Controller Version Data 20663b1w is the version data representing the current version of Wireless Transmitter Controller 20663OSw (Fig. 1512). Wireless Transmitter Controller Version Data 20663b1x is the version data representing the current version of Wireless Transmitter Controller 20663OSx (Fig. 1512). Here, the version data is composed of numeric data, such as '1', '2', and '3', wherein '1' represents version '1.0', '2' represents version '2.0', and '3' represents version '3.0'.

[4084] Figs. 1517 and 1518 illustrate the software programs stored in OS Updating Software Storage Area 20663c (Fig.

1513). As described in the present drawing, OS Updating Software Storage Area 20663c stores Battery Controller Updating Software 20663c1a, CCD Unit Controller Updating Software 20663c1b, Flash Light Unit Controller Updating Software 20663c1c, Indicator Controller Updating Software 20663c1d, Input Device Controller Updating Software 20663c1e, LCD Controller Updating Software 20663c1f, LED Controller Updating Software 20663c1g, Memory Card Interface Controller Updating Software 20663c1h, Microphone Controller Updating Software 20663c1i, Photometer Controller Updating Software 20663c1j, RAM Controller Updating Software 20663c1k, ROM Controller Updating Software 20663c1l, Signal Processor Controller Updating Software 20663c1m, Signal Processor Controller Updating Software 20663c1n, Solar Panel Controller Updating Software 20663c1o, Speaker Controller Updating Software 20663c1p, Vibrator Controller Updating Software 20663c1q, Video Processor Controller Updating Software 20663c1r, Wireless Receiver Controller Updating Software 20663c1s, Wireless Receiver Controller Updating Software 20663c1t, Wireless Receiver Controller Updating Software 20663c1u, Wireless Transmitter Controller Updating Software 20663c1v, Wireless

Transmitter Controller Updating Software 20663c1w, and Wireless Transmitter Controller Updating Software 20663c1x. Battery Controller Updating Software 20663c1a is the software program described in Figs. 1528 and 1529. CCD Unit Controller Updating Software 20663c1b is the software program described in Figs. 1530 and 1531. Flash Light Unit Controller Updating Software 20663c1c is the software program described in Figs. 1532 and 1533. Indicator Controller Updating Software 20663c1d is the software program described in Figs. 1534 and 1535. Input Device Controller Updating Software 20663c1e is the software program described in Figs. 1536 and 1537. LCD Controller Updating Software 20663c1f is the software program described in Figs. 1538 and 1539. LED Controller Updating Software 20663c1g is the software program described in Figs. 1540 and 1541. Memory Card Interface Controller Updating Software 20663c1h is the software program described in Figs. 1542 and 1543. Microphone Controller Updating Software 20663c1i is the software program described in Figs. 1544 and 1545. Photometer Controller Updating Software 20663c1j is the software program described in Figs. 1546 and 1547. RAM Controller Updating Software 20663c1k is the software pro-

gram described in Figs. 1548 and 1549. ROM Controller Updating Software 20663c1l is the software program described in Figs. 1550 and 1551. Signal Processor Controller Updating Software 20663c1m is the software program described in Figs. 1552 and 1553. Signal Processor Controller Updating Software 20663c1n is the software program described in Figs. 1554 and 1555. Solar Panel Controller Updating Software 20663c1o is the software program described in Figs. 1556 and 1557. Speaker Controller Updating Software 20663c1p is the software program described in Figs. 1558 and 1559. Vibrator Controller Updating Software 20663c1q is the software program described in Figs. 1560 and 1561. Video Processor Controller Updating Software 20663c1r is the software program described in Figs. 1562 and 1563. Wireless Receiver Controller Updating Software 20663c1s is the software program described in Figs. 1564 and 1565. Wireless Receiver Controller Updating Software 20663c1t is the software program described in Figs. 1566 and 1567. Wireless Receiver Controller Updating Software 20663c1u is the software program described in Figs. 1568 and 1569. Wireless Transmitter Controller Updating Software 20663c1v is the software program described in Figs. 1570

and 1571. Wireless Transmitter Controller Updating Software 20663c1w is the software program described in Figs. 1572 and 1573. Wireless Transmitter Controller Updating Software 20663c1x is the software program described in Figs. 1574 and 1575.

[4085] Fig. 1519 illustrates the storage areas included in Host H (Fig. 429). As described in the present drawing, Host H includes Operating System H63OS of which the data stored therein are described in Figs. 1520 and 1521, and OS Updating Information Storage Area H63a of which the data and the software programs stored therein are described in Fig. 1522.

[4086] Figs. 1520 and 1521 illustrate the data stored in Operating System H63OS (Fig. 1519). As described in the present drawing, Operating System H63OS includes Battery Controller H63OSa, CCD Unit Controller H63OSb, Flash Light Unit Controller H63OSc, Indicator Controller H63OSd, Input Device Controller H63OSe, LCD Controller H63OSf, LED Controller H63OSg, Memory Card Interface Controller H63OSh, Microphone Controller H63OSi, Photometer Controller H63OSj, RAM Controller H63OSk, ROM Controller H63OSl, Signal Processor Controller H63OSm, Signal Processor Controller H63OSn, Solar Panel Controller H63OSo,

Speaker Controller H63OSp, Vibrator Controller H63OSq, Video Processor Controller H63OSr, Wireless Receiver Controller H63OSs, Wireless Receiver Controller H63OSt, Wireless Receiver Controller H63OSu, Wireless Transmitter Controller H63OSv, Wireless Transmitter Controller H63OSw, and Wireless Transmitter Controller H63OSx. Battery Controller H63OSa is the controller of the latest version which controls Battery 230 (Fig. 467). CCD Unit Controller H63OSb is the controller of the latest version which controls CCD Unit 214 (Fig. 467). Flash Light Unit Controller H63OSc is the controller of the latest version which controls Flash Light Unit 220 (Fig. 467). Indicator Controller H63OSd is the controller of the latest version which controls Indicator 212 (Fig. 467). Input Device Controller H63OSe is the controller of the latest version which controls Input Device 210 (Fig. 467). LCD Controller H63OSf is the controller of the latest version which controls LCD 201 (Fig. 467). LED Controller H63OSg is the controller of the latest version which controls LED 219 (Fig. 467). Memory Card Interface Controller H63OSh is the controller of the latest version which controls Memory Card Interface 221 (Fig. 467). Microphone Controller H63OSi is the controller of the latest version which con-

trols Microphone 215 (Fig. 467). Photometer Controller H63OSj is the controller of the latest version which controls Photometer 232 (Fig. 467). RAM Controller H63OSk is the controller of the latest version which controls Host H (Fig. 467). ROM Controller H63OSl is the controller of the latest version which controls ROM 207 (Fig. 467). Signal Processor Controller H63OSm is the controller of the latest version which controls Signal Processor 205 (Fig. 467). Signal Processor Controller H63OSn is the controller of the latest version which controls Signal Processor 208 (Fig. 467). Solar Panel Controller H63OSo is the controller of the latest version which controls Solar Panel 229 (Fig. 467). Speaker Controller H63OSp is the controller of the latest version which controls Speaker 216L (Fig. 467). Vibrator Controller H63OSq is the controller of the latest version which controls Vibrator 217 (Fig. 467). Video Processor Controller H63OSr is the controller of the latest version which controls Video Processor 202 (Fig. 467). Wireless Receiver Controller H63OSs is the controller of the latest version which controls Wireless Receiver 224 (Fig. 467). Wireless Receiver Controller H63OSt is the controller of the latest version which controls Wireless Receiver 225 (Fig. 467). Wireless Receiver Controller H63OSu

is the controller of the latest version which controls Wireless Receiver 226 (Fig. 467). Wireless Transmitter Controller H63OSv is the controller of the latest version which controls Wireless Transmitter 222 (Fig. 467). Wireless Transmitter Controller H63OSw is the controller of the latest version which controls Wireless Transmitter 223 (Fig. 467). Wireless Transmitter Controller H63OSx is the controller of the latest version which controls Wireless Transmitter 227 (Fig. 467). The data stored in Operating System Storage Area H63OS are updated periodically. For the avoidance of doubt, the data stored in Operating System H63OS are illustrative, and other types of data, which are utilized to update Operating System H63OS of Communication Device 200 by implementing the present funciton, are also stored therein, such as DLLs, drivers, security implementing program. The data stored in Operating System H63OS are updated periodically thereby the data are always of the latest version.

[4087] Fig. 1522 illustrates the storage areas included in OS Updating Information Storage Area H63a (Fig. 1519). As described in the present drawing, OS Updating Information Storage Area H63a includes OS Updating Data Storage Area H63b and OS Updating Software Storage Area H63c.

OS Updating Data Storage Area H63b stores the data necessary to implement the present function on the side of Host H (Fig. 429), such as the ones described in Fig. 1523. OS Updating Software Storage Area H63c stores the software programs necessary to implement the present function on the side of Host H, such as the ones described in Figs. 1526 and 1527.

[4088] Fig. 1523 illustrates the storage area included in OS Updating Data Storage Area H63b (Fig. 1522). As described in the present drawing, OS Updating Data Storage Area H63b includes OS Version Data Storage Area H63b1. OS Version Data Storage Area H63b1 stores the data described in Figs. 1524 and 1525.

[4089] Figs. 1524 and 1525 illustrate the data stored in OS Version Data Storage Area H63b1 (Fig. 1523). As described in the present drawing, OS Version Data Storage Area H63b1 includes Battery Controller Version Data H63b1a, CCD Unit Controller Version Data H63b1b, Flash Light Unit Controller Version Data H63b1c, Indicator Controller Version Data H63b1d, Input Device Controller Version Data H63b1e, LCD Controller Version Data H63b1f, LED Controller Version Data H63b1g, Memory Card Interface Controller Version Data H63b1h, Microphone Controller Ver-

sion Data H63b1i, Photometer Controller Version Data H63b1j, RAM Controller Version Data H63b1k, ROM Controller Version Data H63b1l, Signal Processor Controller Version Data H63b1m, Signal Processor Controller Version Data H63b1n, Solar Panel Controller Version Data H63b1o, Speaker Controller Version Data H63b1p, Vibrator Controller Version Data H63b1q, Video Processor Controller Version Data H63b1r, Wireless Receiver Controller Version Data H63b1s, Wireless Receiver Controller Version Data H63b1t, Wireless Receiver Controller Version Data H63b1u, Wireless Transmitter Controller Version Data H63b1v, Wireless Transmitter Controller Version Data H63b1w, and Wireless Transmitter Controller Version Data H63b1x. Battery Controller Version Data H63b1a is the version data representing the latest version of Battery Controller H63OSa (Fig. 1520). CCD Unit Controller Version Data H63b1b is the version data representing the latest version of CCD Unit Controller H63OSb (Fig. 1520). Flash Light Unit Controller Version Data H63b1c is the version data representing the latest version of Flash Light Unit Controller H63OSc (Fig. 1520). Indicator Controller Version Data H63b1d is the version data representing the latest version of Indicator Controller H63OSd (Fig. 1520).

Input Device Controller Version Data H63b1e is the version data representing the latest version of Input Device Controller H63OSe (Fig. 1520). LCD Controller Version Data H63b1f is the version data representing the latest version of LCD Controller H63OSf (Fig. 1520). LED Controller Version Data H63b1g is the version data representing the latest version of LED Controller H63OSg (Fig. 1520). Memory Card Interface Controller Version Data H63b1h is the version data representing the latest version of Memory Card Interface Controller H63OSh (Fig. 1520). Microphone Controller Version Data H63b1i is the version data representing the latest version of Microphone Controller H63OSi (Fig. 1520). Photometer Controller Version Data H63b1j is the version data representing the latest version of Photometer Controller H63OSj (Fig. 1520). RAM Controller Version Data H63b1k is the version data representing the latest version of RAM Controller H63OSk (Fig. 1520). ROM Controller Version Data H63b1l is the version data representing the latest version of ROM Controller H63OSl (Fig. 1520). Signal Processor Controller Version Data H63b1m is the version data representing the latest version of Signal Processor Controller H63OSm (Fig. 1521). Signal Processor Controller Version Data H63b1n is

the version data representing the latest version of Signal Processor Controller H63OSn (Fig. 1521). Solar Panel Controller Version Data H63b1o is the version data representing the latest version of Solar Panel Controller H63OSo (Fig. 1521). Speaker Controller Version Data H63b1p is the version data representing the latest version of Speaker Controller H63OSp (Fig. 1521). Vibrator Controller Version Data H63b1q is the version data representing the latest version of Vibrator Controller H63OSq (Fig. 1521). Video Processor Controller Version Data H63b1r is the version data representing the latest version of Video Processor Controller H63OSr (Fig. 1521). Wireless Receiver Controller Version Data H63b1s is the version data representing the latest version of Wireless Receiver Controller H63OSs (Fig. 1521). Wireless Receiver Controller Version Data H63b1t is the version data representing the latest version of Wireless Receiver Controller H63OSt (Fig. 1521). Wireless Receiver Controller Version Data H63b1u is the version data representing the latest version of Wireless Receiver Controller H63OSu (Fig. 1521). Wireless Transmitter Controller Version Data H63b1v is the version data representing the latest version of Wireless Transmitter Controller H63OSv (Fig. 1521). Wireless Transmitter Con-

troller Version Data H63b1w is the version data representing the latest version of Wireless Transmitter Controller H63OSw (Fig. 1521). Wireless Transmitter Controller Version Data H63b1x is the version data representing the latest version of Wireless Transmitter Controller H63OSx (Fig. 1521). Here, the version data is composed of numeric data, such as '1', '2', and '3', wherein '1' represents version '1.0', '2' represents version '2.0', and '3' represents version '3.0'. The data stored in OS Version Data Storage Area H63b1 are updated periodically.

[4090] Figs. 1526 and 1527 illustrate the software programs stored in OS Updating Software Storage Area H63c (Fig. 1522). As described in the present drawing, OS Updating Software Storage Area H63c stores Battery Controller Updating Software H63c1a, CCD Unit Controller Updating Software H63c1b, Flash Light Unit Controller Updating Software H63c1c, Indicator Controller Updating Software H63c1d, Input Device Controller Updating Software H63c1e, LCD Controller Updating Software H63c1f, LED Controller Updating Software H63c1g, Memory Card Interface Controller Updating Software H63c1h, Microphone Controller Updating Software H63c1i, Photometer Controller Updating Software H63c1j, RAM Controller Updat-

ing Software H63c1k, ROM Controller Updating Software H63c1l, Signal Processor Controller Updating Software H63c1m, Signal Processor Controller Updating Software H63c1n, Solar Panel Controller Updating Software H63c1o, Speaker Controller Updating Software H63c1p, Vibrator Controller Updating Software H63c1q, Video Processor Controller Updating Software H63c1r, Wireless Receiver Controller Updating Software H63c1s, Wireless Receiver Controller Updating Software H63c1t, Wireless Receiver Controller Updating Software H63c1u, Wireless Transmitter Controller Updating Software H63c1v, Wireless Transmitter Controller Updating Software H63c1w, and Wireless Transmitter Controller Updating Software H63c1x. Battery Controller Updating Software H63c1a is the software program described in Figs. 1528 and 1529. CCD Unit Controller Updating Software H63c1b is the software program described in Figs. 1530 and 1531. Flash Light Unit Controller Updating Software H63c1c is the software program described in Figs. 1532 and 1533. Indicator Controller Updating Software H63c1d is the software program described in Figs. 1534 and 1535. Input Device Controller Updating Software H63c1e is the software program described in Figs. 1536 and 1537. LCD Controller Updating

Software H63c1f is the software program described in Figs. 1538 and 1539. LED Controller Updating Software H63c1g is the software program described in Figs. 1540 and 1541. Memory Card Interface Controller Updating Software H63c1h is the software program described in Figs. 1542 and 1543. Microphone Controller Updating Software H63c1i is the software program described in Figs. 1544 and 1545. Photometer Controller Updating Software H63c1j is the software program described in Figs. 1546 and 1547. RAM Controller Updating Software H63c1k is the software program described in Figs. 1548 and 1549. ROM Controller Updating Software H63c1l is the software program described in Figs. 1550 and 1551. Signal Processor Controller Updating Software H63c1m is the software program described in Figs. 1552 and 1553. Signal Processor Controller Updating Software H63c1n is the software program described in Figs. 1554 and 1555. Solar Panel Controller Updating Software H63c1o is the software program described in Figs. 1556 and 1557. Speaker Controller Updating Software H63c1p is the software program described in Figs. 1558 and 1559. Vibrator Controller Updating Software H63c1q is the software program described in Figs. 1560 and 1561. Video Processor

Controller Updating Software H63c1r is the software program described in Figs. 1562 and 1563. Wireless Receiver Controller Updating Software H63c1s is the software program described in Figs. 1564 and 1565. Wireless Receiver Controller Updating Software H63c1t is the software program described in Figs. 1566 and 1567. Wireless Receiver Controller Updating Software H63c1u is the software program described in Figs. 1568 and 1569. Wireless Transmitter Controller Updating Software H63c1v is the software program described in Figs. 1570 and 1571. Wireless Transmitter Controller Updating Software H63c1w is the software program described in Figs. 1572 and 1573. Wireless Transmitter Controller Updating Software H63c1x is the software program described in Figs. 1574 and 1575. The foregoing software programs are automatically implemented periodically or implemented manually by utilzing Input Device 210 (Fig. 1) or via voice recognition system.

[4091] Fig. 1528 illustrates Battery Controller Updating Software H63c1a (Fig. 1526) of Host H (Fig. 429) and Battery Controller Updating Software 20663c1a (Fig. 1517) of Communication Device 200, which update Battery Controller 20663OSa stored in Operating System 20663OS (Fig.

1511) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves Battery Controller Version Data 20663b1a from OS Version Data Storage Area 20663b1 (Fig. 1515) and sends the data to Host H (S1). Upon receiving Battery Controller Version Data 20663b1a (Fig. 1515) from Communication Device 200 (S2), Host H compares Battery Controller Version Data 20663b1a (Fig. 1515) with Battery Controller Version Data H63b1a stored in OS Version Data Storage Area H63b1 (Fig. 1524) of Host H (S3). Assuming that Host H detects in S3 that Battery Controller Version Data 20663b1a of Communication Device 200 is of an old version. Host H retrieves Battery Controller H63OSa, which is of the latest version, from Operating System Storage Area H63OS (Fig. 1520), and sends the controller to Communication Device 200 (S4). Upon receiving Battery Controller H63OSa from Host H (S5), CPU 211 stores Battery Controller H63OSa as Battery Controller 20663OSa in Operating System 20663OS (Fig. 1511) (S6). The old version of Battery Controller 20663OSa (Fig. 1511) is deleted.

[4092] Fig. 1529 illustrates another embodiment of Battery Controller Updating Software H63c1a (Fig. 1526) of Host H

(Fig. 429) and Battery Controller Updating Software 20663c1a (Fig. 1517) of Communication Device 200, which update Battery Controller 20663OSa stored in Operating System 20663OS (Fig. 1511) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a Battery Controller Update Request, which is received by Host H (S1). Here, the Battery Controller Update Request is a request to send Battery Controller Version Data H63b1a (Fig. 1524) stored in Host H to Communication Device 200. In response to the request, Host H retrieves Battery Controller Version Data H63b1a from OS Version Data Storage Area H63b1 (Fig. 1524), and sends the data to Communication Device 200 (S2). Upon receiving Battery Controller Version Data H63b1a from Host H (S3), CPU 211 compares Battery Controller Version Data H63b1a with Battery Controller Version Data 20663b1a stored in OS Version Data Storage Area 20663b1 (Fig. 1515) of Communication Device 200 (S4). Assuming that CPU211 detects in S4 that Battery Controller Version Data 20663b1a of Communication Device 200 is of an old version. CPU 211 sends a New Battery Controller Sending Request, which is received by Host H (S5). Here, the New

Battery Controller Sending Request is a request to send Battery Controller H63OSa (Fig. 1520) stored in Host H to Communication Device 200. Host H retrieves Battery Controller H63OSa (Fig. 1520), which is of the latest version, from Operating System Storage Area H63OS (Fig. 1520), and sends the controller to Communication Device 200 (S6). Upon receiving Battery Controller H63OSa from Host H (S7), CPU 211 stores Battery Controller H63OSa as Battery Controller 20663OSa in Operating System 20663OS (Fig. 1511) (S8). The old version of Battery Controller 20663OSa (Fig. 1511) is deleted.

[4093] Fig. 1530 illustrates CCD Unit Controller Updating Software H63c1b (Fig. 1526) of Host H (Fig. 429) and CCD Unit Controller Updating Software 20663c1b (Fig. 1517) of Communication Device 200, which update CCD Unit Controller 20663OSb stored in Operating System 20663OS (Fig. 1511) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves CCD Unit Controller Version Data 20663b1b from OS Version Data Storage Area 20663b1 (Fig. 1515) and sends the data to Host H (S1). Upon receiving CCD Unit Controller Version Data 20663b1b (Fig. 1515) from Communication Device 200 (S2), Host H com-

pares CCD Unit Controller Version Data 20663b1b (Fig. 1515) with CCD Unit Controller Version Data H63b1b stored in OS Version Data Storage Area H63b1 (Fig. 1524) of Host H (S3). Assuming that Host H detects in S3 that CCD Unit Controller Version Data 20663b1b of Communication Device 200 is of an old version. Host H retrieves CCD Unit Controller H63OSb, which is of the latest version, from Operating System Storage Area H63OS (Fig. 1520), and sends the controller to Communication Device 200 (S4). Upon receiving CCD Unit Controller H63OSb from Host H (S5), CPU 211 stores CCD Unit Controller H63OSb as CCD Unit Controller 20663OSb in Operating System 20663OS (Fig. 1511) (S6). The old version of CCD Unit Controller 20663OSb (Fig. 1511) is deleted.

[4094] Fig. 1531 illustrates another embodiment of CCD Unit Controller Updating Software H63c1b (Fig. 1526) of Host H (Fig. 429) and CCD Unit Controller Updating Software 20663c1b (Fig. 1517) of Communication Device 200, which update CCD Unit Controller 20663OSb stored in Operating System 20663OS (Fig. 1511) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a CCD Unit Controller Update Request, which is received by Host H

(S1). Here, the CCD Unit Controller Update Request is a request to send CCD Unit Controller Version Data H63b1b (Fig. 1524) stored in Host H to Communication Device 200. In response to the request, Host H retrieves CCD Unit Controller Version Data H63b1b from OS Version Data Storage Area H63b1 (Fig. 1524), and sends the data to Communication Device 200 (S2). Upon receiving CCD Unit Controller Version Data H63b1b from Host H (S3), CPU 211 compares CCD Unit Controller Version Data H63b1b with CCD Unit Controller Version Data 20663b1b stored in OS Version Data Storage Area 20663b1 (Fig. 1515) of Communication Device 200 (S4). Assuming that CPU211 detects in S4 that CCD Unit Controller Version Data 20663b1b of Communication Device 200 is of an old version. CPU 211 sends a New CCD Unit Controller Sending Request, which is received by Host H (S5). Here, the New CCD Unit Controller Sending Request is a request to send CCD Unit Controller H63OSb (Fig. 1520) stored in Host H to Communication Device 200. Host H retrieves CCD Unit Controller H63OSb (Fig. 1520), which is of the latest version, from Operating System Storage Area H63OS (Fig. 1520), and sends the controller to Communication Device 200 (S6). Upon receiving CCD Unit Controller H63OSb

from Host H (S7), CPU 211 stores CCD Unit Controller H63OSb as CCD Unit Controller 20663OSb in Operating System 20663OS (Fig. 1511) (S8). The old version of CCD Unit Controller 20663OSb (Fig. 1511) is deleted.

[4095] Fig. 1532 illustrates Flash Light Unit Controller Updating Software H63c1c (Fig. 1526) of Host H (Fig. 429) and Flash Light Unit Controller Updating Software 20663c1c (Fig. 1517) of Communication Device 200, which update Flash Light Unit Controller 20663OSc stored in Operating System 20663OS (Fig. 1511) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves Flash Light Unit Controller Version Data 20663b1c from OS Version Data Storage Area 20663b1 (Fig. 1515) and sends the data to Host H (S1). Upon receiving Flash Light Unit Controller Version Data 20663b1c (Fig. 1515) from Communication Device 200 (S2), Host H compares Flash Light Unit Controller Version Data 20663b1c (Fig. 1515) with Flash Light Unit Controller Version Data H63b1c stored in OS Version Data Storage Area H63b1 (Fig. 1524) of Host H (S3). Assuming that Host H detects in S3 that Flash Light Unit Controller Version Data 20663b1c of Communication Device 200 is of an old version. Host H retrieves Flash Light

Unit Controller H63OSc, which is of the latest version, from Operating System Storage Area H63OS (Fig. 1520), and sends the controller to Communication Device 200 (S4). Upon receiving Flash Light Unit Controller H63OSc from Host H (S5), CPU 211 stores Flash Light Unit Controller H63OSc as Flash Light Unit Controller 20663OSc in Operating System 20663OS (Fig. 1511) (S6). The old version of Flash Light Unit Controller 20663OSc (Fig. 1511) is deleted.

[4096] Fig. 1533 illustrates another embodiment of Flash Light Unit Controller Updating Software H63c1c (Fig. 1526) of Host H (Fig. 429) and Flash Light Unit Controller Updating Software 20663c1c (Fig. 1517) of Communication Device 200, which update Flash Light Unit Controller 20663OSc stored in Operating System 20663OS (Fig. 1511) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a Flash Light Unit Controller Update Request, which is received by Host H (S1). Here, the Flash Light Unit Controller Update Request is a request to send Flash Light Unit Controller Version Data H63b1c (Fig. 1524) stored in Host H to Communication Device 200. In response to the request, Host H retrieves Flash Light Unit Controller Version Data

H63b1c from OS Version Data Storage Area H63b1 (Fig. 1524), and sends the data to Communication Device 200 (S2). Upon receiving Flash Light Unit Controller Version Data H63b1c from Host H (S3), CPU 211 compares Flash Light Unit Controller Version Data H63b1c with Flash Light Unit Controller Version Data 20663b1c stored in OS Version Data Storage Area 20663b1 (Fig. 1515) of Communication Device 200 (S4). Assuming that CPU211 detects in S4 that Flash Light Unit Controller Version Data 20663b1c of Communication Device 200 is of an old version. CPU 211 sends a New Flash Light Unit Controller Sending Request, which is received by Host H (S5). Here, the New Flash Light Unit Controller Sending Request is a request to send Flash Light Unit Controller H63OSc (Fig. 1520) stored in Host H to Communication Device 200. Host H retrieves Flash Light Unit Controller H63OSc (Fig. 1520), which is of the latest version, from Operating System Storage Area H63OS (Fig. 1520), and sends the controller to Communication Device 200 (S6). Upon receiving Flash Light Unit Controller H63OSc from Host H (S7), CPU 211 stores Flash Light Unit Controller H63OSc as Flash Light Unit Controller 20663OSc in Operating System 20663OS (Fig. 1511) (S8). The old version of Flash Light Unit Controller 20663OSc

(Fig. 1511) is deleted.

[4097] Fig. 1534 illustrates Indicator Controller Updating Software H63c1d (Fig. 1526) of Host H (Fig. 429) and Indicator Controller Updating Software 20663c1d (Fig. 1517) of Communication Device 200, which update Indicator Controller 20663OSd stored in Operating System 20663OS (Fig. 1511) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves Indicator Controller Version Data 20663b1d from OS Version Data Storage Area 20663b1 (Fig. 1515) and sends the data to Host H (S1). Upon receiving Indicator Controller Version Data 20663b1d (Fig. 1515) from Communication Device 200 (S2), Host H compares Indicator Controller Version Data 20663b1d (Fig. 1515) with Indicator Controller Version Data H63b1d stored in OS Version Data Storage Area H63b1 (Fig. 1524) of Host H (S3). Assuming that Host H detects in S3 that Indicator Controller Version Data 20663b1d of Communication Device 200 is of an old version. Host H retrieves Indicator Controller H63OSd, which is of the latest version, from Operating System Storage Area H63OS (Fig. 1520), and sends the controller to Communication Device 200 (S4). Upon receiving Indicator Controller H63OSd from

Host H (S5), CPU 211 stores Indicator Controller H63OSd as Indicator Controller 20663OSd in Operating System 20663OS (Fig. 1511) (S6). The old version of Indicator Controller 20663OSd (Fig. 1511) is deleted.

[4098] Fig. 1535 illustrates another embodiment of Indicator Controller Updating Software H63c1d (Fig. 1526) of Host H (Fig. 429) and Indicator Controller Updating Software 20663c1d (Fig. 1517) of Communication Device 200, which update Indicator Controller 20663OSd stored in Operating System 20663OS (Fig. 1511) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a Indicator Controller Update Request, which is received by Host H (S1). Here, the Indicator Controller Update Request is a request to send Indicator Controller Version Data H63b1d (Fig. 1524) stored in Host H to Communication Device 200. In response to the request, Host H retrieves Indicator Controller Version Data H63b1d from OS Version Data Storage Area H63b1 (Fig. 1524), and sends the data to Communication Device 200 (S2). Upon receiving Indicator Controller Version Data H63b1d from Host H (S3), CPU 211 compares Indicator Controller Version Data H63b1d with Indicator Controller Version Data 20663b1d stored in

OS Version Data Storage Area 20663b1 (Fig. 1515) of Communication Device 200 (S4). Assuming that CPU211 detects in S4 that Indicator Controller Version Data 20663b1d of Communication Device 200 is of an old version. CPU 211 sends a New Indicator Controller Sending Request, which is received by Host H (S5). Here, the New Indicator Controller Sending Request is a request to send Indicator Controller H63OSd (Fig. 1520) stored in Host H to Communication Device 200. Host H retrieves Indicator Controller H63OSd (Fig. 1520), which is of the latest version, from Operating System Storage Area H63OS (Fig. 1520), and sends the controller to Communication Device 200 (S6). Upon receiving Indicator Controller H63OSd from Host H (S7), CPU 211 stores Indicator Controller H63OSd as Indicator Controller 20663OSd in Operating System 20663OS (Fig. 1511) (S8). The old version of Indicator Controller 20663OSd (Fig. 1511) is deleted.

[4099] Fig. 1536 illustrates Input Device Controller Updating Software H63c1e (Fig. 1526) of Host H (Fig. 429) and Input Device Controller Updating Software 20663c1e (Fig. 1517) of Communication Device 200, which update Input Device Controller 20663OSe stored in Operating System 20663OS (Fig. 1511) of Communication Device 200. As

described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves Input Device Controller Version Data 20663b1e from OS Version Data Storage Area 20663b1 (Fig. 1515) and sends the data to Host H (S1). Upon receiving Input Device Controller Version Data 20663b1e (Fig. 1515) from Communication Device 200 (S2), Host H compares Input Device Controller Version Data 20663b1e (Fig. 1515) with Input Device Controller Version Data H63b1e stored in OS Version Data Storage Area H63b1 (Fig. 1524) of Host H (S3). Assuming that Host H detects in S3 that Input Device Controller Version Data 20663b1e of Communication Device 200 is of an old version. Host H retrieves Input Device Controller H63OSe, which is of the latest version, from Operating System Storage Area H63OS (Fig. 1520), and sends the controller to Communication Device 200 (S4). Upon receiving Input Device Controller H63OSe from Host H (S5), CPU 211 stores Input Device Controller H63OSe as Input Device Controller 20663OSe in Operating System 20663OS (Fig. 1511) (S6). The old version of Input Device Controller 20663OSe (Fig. 1511) is deleted.

[4100] Fig. 1537 illustrates another embodiment of Input Device Controller Updating Software H63c1e (Fig. 1526) of Host

H (Fig. 429) and Input Device Controller Updating Software 20663c1e (Fig. 1517) of Communication Device 200, which update Input Device Controller 20663OSe stored in Operating System 20663OS (Fig. 1511) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a Input Device Controller Update Request, which is received by Host H (S1). Here, the Input Device Controller Update Request is a request to send Input Device Controller Version Data H63b1e (Fig. 1524) stored in Host H to Communication Device 200. In response to the request, Host H retrieves Input Device Controller Version Data H63b1e from OS Version Data Storage Area H63b1 (Fig. 1524), and sends the data to Communication Device 200 (S2). Upon receiving Input Device Controller Version Data H63b1e from Host H (S3), CPU 211 compares Input Device Controller Version Data H63b1e with Input Device Controller Version Data 20663b1e stored in OS Version Data Storage Area 20663b1 (Fig. 1515) of Communication Device 200 (S4). Assuming that CPU211 detects in S4 that Input Device Controller Version Data 20663b1e of Communication Device 200 is of an old version. CPU 211 sends a New Input Device Controller Sending Request, which is received by

Host H (S5). Here, the New Input Device Controller Sending Request is a request to send Input Device Controller H63OSe (Fig. 1520) stored in Host H to Communication Device 200. Host H retrieves Input Device Controller H63OSe (Fig. 1520), which is of the latest version, from Operating System Storage Area H63OS (Fig. 1520), and sends the controller to Communication Device 200 (S6). Upon receiving Input Device Controller H63OSe from Host H (S7), CPU 211 stores Input Device Controller H63OSe as Input Device Controller 20663OSe in Operating System 20663OS (Fig. 1511) (S8). The old version of Input Device Controller 20663OSe (Fig. 1511) is deleted.

[4101] Fig. 1538 illustrates LCD Controller Updating Software H63c1f (Fig. 1526) of Host H (Fig. 429) and LCD Controller Updating Software 20663c1f (Fig. 1517) of Communication Device 200, which update LCD Controller 20663OSf stored in Operating System 20663OS (Fig. 1511) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves LCD Controller Version Data 20663b1f from OS Version Data Storage Area 20663b1 (Fig. 1515) and sends the data to Host H (S1). Upon receiving LCD Controller Version Data 20663b1f (Fig. 1515) from Communication

Device 200 (S2), Host H compares LCD Controller Version Data 20663b1f (Fig. 1515) with LCD Controller Version Data H63b1f stored in OS Version Data Storage Area H63b1 (Fig. 1524) of Host H (S3). Assuming that Host H detects in S3 that LCD Controller Version Data 20663b1f of Communication Device 200 is of an old version. Host H retrieves LCD Controller H63OSf, which is of the latest version, from Operating System Storage Area H63OS (Fig. 1520), and sends the controller to Communication Device 200 (S4). Upon receiving LCD Controller H63OSf from Host H (S5), CPU 211 stores LCD Controller H63OSf as LCD Controller 20663OSf in Operating System 20663OS (Fig. 1511) (S6). The old version of LCD Controller 20663OSf (Fig. 1511) is deleted.

[4102] Fig. 1539 illustrates another embodiment of LCD Controller Updating Software H63c1f (Fig. 1526) of Host H (Fig. 429) and LCD Controller Updating Software 20663c1f (Fig. 1517) of Communication Device 200, which update LCD Controller 20663OSf stored in Operating System 20663OS (Fig. 1511) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a LCD Controller Update Request, which is received by Host H (S1). Here, the

LCD Controller Update Request is a request to send LCD Controller Version Data H63b1f (Fig. 1524) stored in Host H to Communication Device 200. In response to the request, Host H retrieves LCD Controller Version Data H63b1f from OS Version Data Storage Area H63b1 (Fig. 1524), and sends the data to Communication Device 200 (S2). Upon receiving LCD Controller Version Data H63b1f from Host H (S3), CPU 211 compares LCD Controller Version Data H63b1f with LCD Controller Version Data 20663b1f stored in OS Version Data Storage Area 20663b1 (Fig. 1515) of Communication Device 200 (S4). Assuming that CPU211 detects in S4 that LCD Controller Version Data 20663b1f of Communication Device 200 is of an old version. CPU 211 sends a New LCD Controller Sending Request, which is received by Host H (S5). Here, the New LCD Controller Sending Request is a request to send LCD Controller H63OSf (Fig. 1520) stored in Host H to Communication Device 200. Host H retrieves LCD Controller H63OSf (Fig. 1520), which is of the latest version, from Operating System Storage Area H63OS (Fig. 1520), and sends the controller to Communication Device 200 (S6). Upon receiving LCD Controller H63OSf from Host H (S7), CPU 211 stores LCD Controller H63OSf as LCD Con-

troller 20663OSf in Operating System 20663OS (Fig. 1511) (S8). The old version of LCD Controller 20663OSf (Fig. 1511) is deleted.

[4103] Fig. 1540 illustrates LED Controller Updating Software H63c1g (Fig. 1526) of Host H (Fig. 429) and LED Controller Updating Software 20663c1g (Fig. 1517) of Communication Device 200, which update LED Controller 20663OSg stored in Operating System 20663OS (Fig. 1511) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves LED Controller Version Data 20663b1g from OS Version Data Storage Area 20663b1 (Fig. 1515) and sends the data to Host H (S1). Upon receiving LED Controller Version Data 20663b1g (Fig. 1515) from Communication Device 200 (S2), Host H compares LED Controller Version Data 20663b1g (Fig. 1515) with LED Controller Version Data H63b1g stored in OS Version Data Storage Area H63b1 (Fig. 1524) of Host H (S3). Assuming that Host H detects in S3 that LED Controller Version Data 20663b1g of Communication Device 200 is of an old version. Host H retrieves LED Controller H63OSg, which is of the latest version, from Operating System Storage Area H63OS (Fig. 1520), and sends the controller to Communi-

cation Device 200 (S4). Upon receiving LED Controller H63OSg from Host H (S5), CPU 211 stores LED Controller H63OSg as LED Controller 20663OSg in Operating System 20663OS (Fig. 1511) (S6). The old version of LED Controller 20663OSg (Fig. 1511) is deleted.

[4104] Fig. 1541 illustrates another embodiment of LED Controller Updating Software H63c1g (Fig. 1526) of Host H (Fig. 429) and LED Controller Updating Software 20663c1g (Fig. 1517) of Communication Device 200, which update LED Controller 20663OSg stored in Operating System 20663OS (Fig. 1511) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a LED Controller Update Request, which is received by Host H (S1). Here, the LED Controller Update Request is a request to send LED Controller Version Data H63b1g (Fig. 1524) stored in Host H to Communication Device 200. In response to the request, Host H retrieves LED Controller Version Data H63b1g from OS Version Data Storage Area H63b1 (Fig. 1524), and sends the data to Communication Device 200 (S2). Upon receiving LED Controller Version Data H63b1g from Host H (S3), CPU 211 compares LED Controller Version Data H63b1g with LED Controller Version Data

20663b1g stored in OS Version Data Storage Area 20663b1 (Fig. 1515) of Communication Device 200 (S4). Assuming that CPU211 detects in S4 that LED Controller Version Data 20663b1g of Communication Device 200 is of an old version. CPU 211 sends a New LED Controller Sending Request, which is received by Host H (S5). Here, the New LED Controller Sending Request is a request to send LED Controller H63OSg (Fig. 1520) stored in Host H to Communication Device 200. Host H retrieves LED Controller H63OSg (Fig. 1520), which is of the latest version, from Operating System Storage Area H63OS (Fig. 1520), and sends the controller to Communication Device 200 (S6). Upon receiving LED Controller H63OSg from Host H (S7), CPU 211 stores LED Controller H63OSg as LED Controller 20663OSg in Operating System 20663OS (Fig. 1511) (S8). The old version of LED Controller 20663OSg (Fig. 1511) is deleted.

[4105] Fig. 1542 illustrates Memory Card Interface Controller Updating Software H63c1h (Fig. 1526) of Host H (Fig. 429) and Memory Card Interface Controller Updating Software 20663c1h (Fig. 1517) of Communication Device 200, which update Memory Card Interface Controller 20663OSh stored in Operating System 20663OS (Fig. 1511) of Com-

munication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves Memory Card Interface Controller Version Data 20663b1h from OS Version Data Storage Area 20663b1 (Fig. 1515) and sends the data to Host H (S1). Upon receiving Memory Card Interface Controller Version Data 20663b1h (Fig. 1515) from Communication Device 200 (S2), Host H compares Memory Card Interface Controller Version Data 20663b1h (Fig. 1515) with Memory Card Interface Controller Version Data H63b1h stored in OS Version Data Storage Area H63b1 (Fig. 1524) of Host H (S3). Assuming that Host H detects in S3 that Memory Card Interface Controller Version Data 20663b1h of Communication Device 200 is of an old version. Host H retrieves Memory Card Interface Controller H63OSh, which is of the latest version, from Operating System Storage Area H63OS (Fig. 1520), and sends the controller to Communication Device 200 (S4). Upon receiving Memory Card Interface Controller H63OSh from Host H (S5), CPU 211 stores Memory Card Interface Controller H63OSh as Memory Card Interface Controller 20663OSh in Operating System 20663OS (Fig. 1511) (S6). The old version of Memory Card Interface Controller 20663OSh (Fig. 1511) is deleted.

[4106] Fig. 1543 illustrates another embodiment of Memory Card Interface Controller Updating Software H63c1h (Fig. 1526) of Host H (Fig. 429) and Memory Card Interface Controller Updating Software 20663c1h (Fig. 1517) of Communication Device 200, which update Memory Card Interface Controller 20663OSh stored in Operating System 20663OS (Fig. 1511) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a Memory Card Interface Controller Update Request, which is received by Host H (S1). Here, the Memory Card Interface Controller Update Request is a request to send Memory Card Interface Controller Version Data H63b1h (Fig. 1524) stored in Host H to Communication Device 200. In response to the request, Host H retrieves Memory Card Interface Controller Version Data H63b1h from OS Version Data Storage Area H63b1 (Fig. 1524), and sends the data to Communication Device 200 (S2). Upon receiving Memory Card Interface Controller Version Data H63b1h from Host H (S3), CPU 211 compares Memory Card Interface Controller Version Data H63b1h with Memory Card Interface Controller Version Data 20663b1h stored in OS Version Data Storage Area 20663b1 (Fig. 1515) of Communication Device 200 (S4).

Assuming that CPU211 detects in S4 that Memory Card Interface Controller Version Data 20663b1h of Communication Device 200 is of an old version. CPU 211 sends a New Memory Card Interface Controller Sending Request, which is received by Host H (S5). Here, the New Memory Card Interface Controller Sending Request is a request to send Memory Card Interface Controller H63OSh (Fig. 1520) stored in Host H to Communication Device 200. Host H retrieves Memory Card Interface Controller H63OSh (Fig. 1520), which is of the latest version, from Operating System Storage Area H63OS (Fig. 1520), and sends the controller to Communication Device 200 (S6). Upon receiving Memory Card Interface Controller H63OSh from Host H (S7), CPU 211 stores Memory Card Interface Controller H63OSh as Memory Card Interface Controller 20663OSh in Operating System 20663OS (Fig. 1511) (S8). The old version of Memory Card Interface Controller 20663OSh (Fig. 1511) is deleted.

[4107] Fig. 1544 illustrates Microphone Controller Updating Software H63c1i (Fig. 1526) of Host H (Fig. 429) and Microphone Controller Updating Software 20663c1i (Fig. 1517) of Communication Device 200, which update Microphone Controller 20663OSi stored in Operating System 20663OS

(Fig. 1511) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves Microphone Controller Version Data 20663b1i from OS Version Data Storage Area 20663b1 (Fig. 1515) and sends the data to Host H (S1). Upon receiving Microphone Controller Version Data 20663b1i (Fig. 1515) from Communication Device 200 (S2), Host H compares Microphone Controller Version Data 20663b1i (Fig. 1515) with Microphone Controller Version Data H63b1i stored in OS Version Data Storage Area H63b1 (Fig. 1524) of Host H (S3). Assuming that Host H detects in S3 that Microphone Controller Version Data 20663b1i of Communication Device 200 is of an old version. Host H retrieves Microphone Controller H63OSi, which is of the latest version, from Operating System Storage Area H63OS (Fig. 1520), and sends the controller to Communication Device 200 (S4). Upon receiving Microphone Controller H63OSi from Host H (S5), CPU 211 stores Microphone Controller H63OSi as Microphone Controller 20663OSi in Operating System 20663OS (Fig. 1511) (S6). The old version of Microphone Controller 20663OSi (Fig. 1511) is deleted.

[4108] Fig. 1545 illustrates another embodiment of Microphone

Controller Updating Software H63c1i (Fig. 1526) of Host H (Fig. 429) and Microphone Controller Updating Software 20663c1i (Fig. 1517) of Communication Device 200, which update Microphone Controller 20663OSi stored in Operating System 20663OS (Fig. 1511) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a Microphone Controller Update Request, which is received by Host H (S1). Here, the Microphone Controller Update Request is a request to send Microphone Controller Version Data H63b1i (Fig. 1524) stored in Host H to Communication Device 200. In response to the request, Host H retrieves Microphone Controller Version Data H63b1i from OS Version Data Storage Area H63b1 (Fig. 1524), and sends the data to Communication Device 200 (S2). Upon receiving Microphone Controller Version Data H63b1i from Host H (S3), CPU 211 compares Microphone Controller Version Data H63b1i with Microphone Controller Version Data 20663b1i stored in OS Version Data Storage Area 20663b1 (Fig. 1515) of Communication Device 200 (S4). Assuming that CPU211 detects in S4 that Microphone Controller Version Data 20663b1i of Communication Device 200 is of an old version. CPU 211 sends a New Micro-

phone Controller Sending Request, which is received by Host H (S5). Here, the New Microphone Controller Sending Request is a request to send Microphone Controller H63OSi (Fig. 1520) stored in Host H to Communication Device 200. Host H retrieves Microphone Controller H63OSi (Fig. 1520), which is of the latest version, from Operating System Storage Area H63OS (Fig. 1520), and sends the controller to Communication Device 200 (S6). Upon receiving Microphone Controller H63OSi from Host H (S7), CPU 211 stores Microphone Controller H63OSi as Microphone Controller 20663OSi in Operating System 20663OS (Fig. 1511) (S8). The old version of Microphone Controller 20663OSi (Fig. 1511) is deleted.

[4109] Fig. 1546 illustrates Photometer Controller Updating Software H63c1j (Fig. 1526) of Host H (Fig. 429) and Photometer Controller Updating Software 20663c1j (Fig. 1517) of Communication Device 200, which update Photometer Controller 20663OSj stored in Operating System 20663OS (Fig. 1511) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves Photometer Controller Version Data 20663b1j from OS Version Data Storage Area 20663b1 (Fig. 1515) and sends the data to Host

H (S1). Upon receiving Photometer Controller Version Data 20663b1j (Fig. 1515) from Communication Device 200 (S2), Host H compares Photometer Controller Version Data 20663b1j (Fig. 1515) with Photometer Controller Version Data H63b1j stored in OS Version Data Storage Area H63b1 (Fig. 1524) of Host H (S3). Assuming that Host H detects in S3 that Photometer Controller Version Data 20663b1j of Communication Device 200 is of an old version. Host H retrieves Photometer Controller H63OSj, which is of the latest version, from Operating System Storage Area H63OS (Fig. 1520), and sends the controller to Communication Device 200 (S4). Upon receiving Photometer Controller H63OSj from Host H (S5), CPU 211 stores Photometer Controller H63OSj as Photometer Controller 20663OSj in Operating System 20663OS (Fig. 1511) (S6). The old version of Photometer Controller 20663OSj (Fig. 1511) is deleted.

[4110] Fig. 1547 illustrates another embodiment of Photometer Controller Updating Software H63c1j (Fig. 1526) of Host H (Fig. 429) and Photometer Controller Updating Software 20663c1j (Fig. 1517) of Communication Device 200, which update Photometer Controller 20663OSj stored in Operating System 20663OS (Fig. 1511) of Communication

Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a Photometer Controller Update Request, which is received by Host H (S1). Here, the Photometer Controller Update Request is a request to send Photometer Controller Version Data H63b1j (Fig. 1524) stored in Host H to Communication Device 200. In response to the request, Host H retrieves Photometer Controller Version Data H63b1j from OS Version Data Storage Area H63b1 (Fig. 1524), and sends the data to Communication Device 200 (S2). Upon receiving Photometer Controller Version Data H63b1j from Host H (S3), CPU 211 compares Photometer Controller Version Data H63b1j with Photometer Controller Version Data 20663b1j stored in OS Version Data Storage Area 20663b1 (Fig. 1515) of Communication Device 200 (S4). Assuming that CPU211 detects in S4 that Photometer Controller Version Data 20663b1j of Communication Device 200 is of an old version. CPU 211 sends a New Photometer Controller Sending Request, which is received by Host H (S5). Here, the New Photometer Controller Sending Request is a request to send Photometer Controller H63OSj (Fig. 1520) stored in Host H to Communication Device 200. Host H retrieves Photometer Controller

H63OSj (Fig. 1520), which is of the latest version, from Operating System Storage Area H63OS (Fig. 1520), and sends the controller to Communication Device 200 (S6). Upon receiving Photometer Controller H63OSj from Host H (S7), CPU 211 stores Photometer Controller H63OSj as Photometer Controller 20663OSj in Operating System 20663OS (Fig. 1511) (S8). The old version of Photometer Controller 20663OSj (Fig. 1511) is deleted.

[4111] Fig. 1548 illustrates RAM Controller Updating Software H63c1k (Fig. 1526) of Host H (Fig. 429) and RAM Controller Updating Software 20663c1k (Fig. 1517) of Communication Device 200, which update RAM Controller 20663OSk stored in Operating System 20663OS (Fig. 1511) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves RAM Controller Version Data 20663b1k from OS Version Data Storage Area 20663b1 (Fig. 1515) and sends the data to Host H (S1). Upon receiving RAM Controller Version Data 20663b1k (Fig. 1515) from Communication Device 200 (S2), Host H compares RAM Controller Version Data 20663b1k (Fig. 1515) with RAM Controller Version Data H63b1k stored in OS Version Data Storage Area H63b1 (Fig. 1524) of Host H (S3). Assuming

that Host H detects in S3 that RAM Controller Version Data 20663b1k of Communication Device 200 is of an old version. Host H retrieves RAM Controller H63OSk, which is of the latest version, from Operating System Storage Area H63OS (Fig. 1520), and sends the controller to Communication Device 200 (S4). Upon receiving RAM Controller H63OSk from Host H (S5), CPU 211 stores RAM Controller H63OSk as RAM Controller 20663OSk in Operating System 20663OS (Fig. 1511) (S6). The old version of RAM Controller 20663OSk (Fig. 1511) is deleted.

[4112] Fig. 1549 illustrates another embodiment of RAM Controller Updating Software H63c1k (Fig. 1526) of Host H (Fig. 429) and RAM Controller Updating Software 20663c1k (Fig. 1517) of Communication Device 200, which update RAM Controller 20663OSk stored in Operating System 20663OS (Fig. 1511) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a RAM Controller Update Request, which is received by Host H (S1). Here, the RAM Controller Update Request is a request to send RAM Controller Version Data H63b1k (Fig. 1524) stored in Host H to Communication Device 200. In response to the request, Host H retrieves RAM Controller Version Data

H63b1k from OS Version Data Storage Area H63b1 (Fig. 1524), and sends the data to Communication Device 200 (S2). Upon receiving RAM Controller Version Data H63b1k from Host H (S3), CPU 211 compares RAM Controller Version Data H63b1k with RAM Controller Version Data 20663b1k stored in OS Version Data Storage Area 20663b1 (Fig. 1515) of Communication Device 200 (S4). Assuming that CPU211 detects in S4 that RAM Controller Version Data 20663b1k of Communication Device 200 is of an old version. CPU 211 sends a New RAM Controller Sending Request, which is received by Host H (S5). Here, the New RAM Controller Sending Request is a request to send RAM Controller H63OSk (Fig. 1520) stored in Host H to Communication Device 200. Host H retrieves RAM Controller H63OSk (Fig. 1520), which is of the latest version, from Operating System Storage Area H63OS (Fig. 1520), and sends the controller to Communication Device 200 (S6). Upon receiving RAM Controller H63OSk from Host H (S7), CPU 211 stores RAM Controller H63OSk as RAM Controller 20663OSk in Operating System 20663OS (Fig. 1511) (S8). The old version of RAM Controller 20663OSk (Fig. 1511) is deleted.

[4113] Fig. 1550 illustrates ROM Controller Updating Software

H63c1l (Fig. 1526) of Host H (Fig. 429) and ROM Controller Updating Software 20663c1l (Fig. 1517) of Communication Device 200, which update ROM Controller 20663OSl stored in Operating System 20663OS (Fig. 1511) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves ROM Controller Version Data 20663b1l from OS Version Data Storage Area 20663b1 (Fig. 1515) and sends the data to Host H (S1). Upon receiving ROM Controller Version Data 20663b1l (Fig. 1515) from Communication Device 200 (S2), Host H compares ROM Controller Version Data 20663b1l (Fig. 1515) with ROM Controller Version Data H63b1l stored in OS Version Data Storage Area H63b1 (Fig. 1524) of Host H (S3). Assuming that Host H detects in S3 that ROM Controller Version Data 20663b1l of Communication Device 200 is of an old version. Host H retrieves ROM Controller H63OSl, which is of the latest version, from Operating System Storage Area H63OS (Fig. 1520), and sends the controller to Communication Device 200 (S4). Upon receiving ROM Controller H63OSl from Host H (S5), CPU 211 stores ROM Controller H63OSl as ROM Controller 20663OSl in Operating System 20663OS (Fig. 1511) (S6). The old version of ROM Con-

troller 20663OSl (Fig. 1511) is deleted.

[4114] Fig. 1551 illustrates another embodiment of ROM Controller Updating Software H63c1l (Fig. 1526) of Host H (Fig. 429) and ROM Controller Updating Software 20663c1l (Fig. 1517) of Communication Device 200, which update ROM Controller 20663OSl stored in Operating System 20663OS (Fig. 1511) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a ROM Controller Update Request, which is received by Host H (S1). Here, the ROM Controller Update Request is a request to send ROM Controller Version Data H63b1l (Fig. 1524) stored in Host H to Communication Device 200. In response to the request, Host H retrieves ROM Controller Version Data H63b1l from OS Version Data Storage Area H63b1 (Fig. 1524), and sends the data to Communication Device 200 (S2). Upon receiving ROM Controller Version Data H63b1l from Host H (S3), CPU 211 compares ROM Controller Version Data H63b1l with ROM Controller Version Data 20663b1l stored in OS Version Data Storage Area 20663b1 (Fig. 1515) of Communication Device 200 (S4). Assuming that CPU211 detects in S4 that ROM Controller Version Data 20663b1l of Communication Device 200 is

of an old version. CPU 211 sends a New ROM Controller Sending Request, which is received by Host H (S5). Here, the New ROM Controller Sending Request is a request to send ROM Controller H63OSl (Fig. 1520) stored in Host H to Communication Device 200. Host H retrieves ROM Controller H63OSl (Fig. 1520), which is of the latest version, from Operating System Storage Area H63OS (Fig. 1520), and sends the controller to Communication Device 200 (S6). Upon receiving ROM Controller H63OSl from Host H (S7), CPU 211 stores ROM Controller H63OSl as ROM Controller 20663OSl in Operating System 20663OS (Fig. 1511) (S8). The old version of ROM Controller 20663OSl (Fig. 1511) is deleted.

[4115] Fig. 1552 illustrates Signal Processor Controller Updating Software H63c1m (Fig. 1527) of Host H (Fig. 429) and Signal Processor Controller Updating Software 20663c1m (Fig. 1518) of Communication Device 200, which update Signal Processor Controller 20663OSm stored in Operating System 20663OS (Fig. 1512) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves Signal Processor Controller Version Data 20663b1m from OS Version Data Storage Area 20663b1 (Fig. 1516) and sends the data to

Host H (S1). Upon receiving Signal Processor Controller Version Data 20663b1m (Fig. 1516) from Communication Device 200 (S2), Host H compares Signal Processor Controller Version Data 20663b1m (Fig. 1516) with Signal Processor Controller Version Data H63b1m stored in OS Version Data Storage Area H63b1 (Fig. 1525) of Host H (S3). Assuming that Host H detects in S3 that Signal Processor Controller Version Data 20663b1m of Communication Device 200 is of an old version. Host H retrieves Signal Processor Controller H63OSm, which is of the latest version, from Operating System Storage Area H63OS (Fig. 1521), and sends the controller to Communication Device 200 (S4). Upon receiving Signal Processor Controller H63OSm from Host H (S5), CPU 211 stores Signal Processor Controller H63OSm as Signal Processor Controller 20663OSm in Operating System 20663OS (Fig. 1512) (S6). The old version of Signal Processor Controller 20663OSm (Fig. 1512) is deleted.

[4116] Fig. 1553 illustrates another embodiment of Signal Processor Controller Updating Software H63c1m (Fig. 1527) of Host H (Fig. 429) and Signal Processor Controller Updating Software 20663c1m (Fig. 1518) of Communication Device 200, which update Signal Processor Controller

20663OSm stored in Operating System 20663OS (Fig. 1512) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a Signal Processor Controller Update Request, which is received by Host H (S1). Here, the Signal Processor Controller Update Request is a request to send Signal Processor Controller Version Data H63b1m (Fig. 1525) stored in Host H to Communication Device 200. In response to the request, Host H retrieves Signal Processor Controller Version Data H63b1m from OS Version Data Storage Area H63b1 (Fig. 1525), and sends the data to Communication Device 200 (S2). Upon receiving Signal Processor Controller Version Data H63b1m from Host H (S3), CPU 211 compares Signal Processor Controller Version Data H63b1m with Signal Processor Controller Version Data 20663b1m stored in OS Version Data Storage Area 20663b1 (Fig. 1516) of Communication Device 200 (S4). Assuming that CPU211 detects in S4 that Signal Processor Controller Version Data 20663b1m of Communication Device 200 is of an old version. CPU 211 sends a New Signal Processor Controller Sending Request, which is received by Host H (S5). Here, the New Signal Processor Controller Sending Request is a request to send Signal

Processor Controller H63OSm (Fig. 1521) stored in Host H to Communication Device 200. Host H retrieves Signal Processor Controller H63OSm (Fig. 1521), which is of the latest version, from Operating System Storage Area H63OS (Fig. 1521), and sends the controller to Communication Device 200 (S6). Upon receiving Signal Processor Controller H63OSm from Host H (S7), CPU 211 stores Signal Processor Controller H63OSm as Signal Processor Controller 20663OSm in Operating System 20663OS (Fig. 1512) (S8). The old version of Signal Processor Controller 20663OSm (Fig. 1512) is deleted.

[4117] Fig. 1554 illustrates Signal Processor Controller Updating Software H63c1n (Fig. 1527) of Host H (Fig. 429) and Signal Processor Controller Updating Software 20663c1n (Fig. 1518) of Communication Device 200, which update Signal Processor Controller 20663OSn stored in Operating System 20663OS (Fig. 1512) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves Signal Processor Controller Version Data 20663b1n from OS Version Data Storage Area 20663b1 (Fig. 1516) and sends the data to Host H (S1). Upon receiving Signal Processor Controller Version Data 20663b1n (Fig. 1516) from Communication

Device 200 (S2), Host H compares Signal Processor Controller Version Data 20663b1n (Fig. 1516) with Signal Processor Controller Version Data H63b1n stored in OS Version Data Storage Area H63b1 (Fig. 1525) of Host H (S3). Assuming that Host H detects in S3 that Signal Processor Controller Version Data 20663b1n of Communication Device 200 is of an old version. Host H retrieves Signal Processor Controller H63OSn, which is of the latest version, from Operating System Storage Area H63OS (Fig. 1521), and sends the controller to Communication Device 200 (S4). Upon receiving Signal Processor Controller H63OSn from Host H (S5), CPU 211 stores Signal Processor Controller H63OSn as Signal Processor Controller 20663OSn in Operating System 20663OS (Fig. 1512) (S6). The old version of Signal Processor Controller 20663OSn (Fig. 1512) is deleted.

[4118] Fig. 1555 illustrates another embodiment of Signal Processor Controller Updating Software H63c1n (Fig. 1527) of Host H (Fig. 429) and Signal Processor Controller Updating Software 20663c1n (Fig. 1518) of Communication Device 200, which update Signal Processor Controller 20663OSn stored in Operating System 20663OS (Fig. 1512) of Communication Device 200. As described in the present draw-

ing, CPU 211 (Fig. 1) of Communication Device 200 sends a Signal Processor Controller Update Request, which is received by Host H (S1). Here, the Signal Processor Controller Update Request is a request to send Signal Processor Controller Version Data H63b1n (Fig. 1525) stored in Host H to Communication Device 200. In response to the request, Host H retrieves Signal Processor Controller Version Data H63b1n from OS Version Data Storage Area H63b1 (Fig. 1525), and sends the data to Communication Device 200 (S2). Upon receiving Signal Processor Controller Version Data H63b1n from Host H (S3), CPU 211 compares Signal Processor Controller Version Data H63b1n with Signal Processor Controller Version Data 20663b1n stored in OS Version Data Storage Area 20663b1 (Fig. 1516) of Communication Device 200 (S4). Assuming that CPU211 detects in S4 that Signal Processor Controller Version Data 20663b1n of Communication Device 200 is of an old version. CPU 211 sends a New Signal Processor Controller Sending Request, which is received by Host H (S5). Here, the New Signal Processor Controller Sending Request is a request to send Signal Processor Controller H63OSn (Fig. 1521) stored in Host H to Communication Device 200. Host H retrieves Signal Processor

Controller H63OSn (Fig. 1521), which is of the latest version, from Operating System Storage Area H63OS (Fig. 1521), and sends the controller to Communication Device 200 (S6). Upon receiving Signal Processor Controller H63OSn from Host H (S7), CPU 211 stores Signal Processor Controller H63OSn as Signal Processor Controller 20663OSn in Operating System 20663OS (Fig. 1512) (S8). The old version of Signal Processor Controller 20663OSn (Fig. 1512) is deleted.

[4119] Fig. 1556 illustrates Solar Panel Controller Updating Software H63c1o (Fig. 1527) of Host H (Fig. 429) and Solar Panel Controller Updating Software 20663c1o (Fig. 1518) of Communication Device 200, which update Solar Panel Controller 20663OSo stored in Operating System 20663OS (Fig. 1512) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves Solar Panel Controller Version Data 20663b1o from OS Version Data Storage Area 20663b1 (Fig. 1516) and sends the data to Host H (S1). Upon receiving Solar Panel Controller Version Data 20663b1o (Fig. 1516) from Communication Device 200 (S2), Host H compares Solar Panel Controller Version Data 20663b1o (Fig. 1516) with Solar Panel Controller Version

Data H63b1o stored in OS Version Data Storage Area H63b1 (Fig. 1525) of Host H (S3). Assuming that Host H detects in S3 that Solar Panel Controller Version Data 20663b1o of Communication Device 200 is of an old version. Host H retrieves Solar Panel Controller H63OSo, which is of the latest version, from Operating System Storage Area H63OS (Fig. 1521), and sends the controller to Communication Device 200 (S4). Upon receiving Solar Panel Controller H63OSo from Host H (S5), CPU 211 stores Solar Panel Controller H63OSo as Solar Panel Controller 20663OSo in Operating System 20663OS (Fig. 1512) (S6). The old version of Solar Panel Controller 20663OSo (Fig. 1512) is deleted.

[4120] Fig. 1557 illustrates another embodiment of Solar Panel Controller Updating Software H63c1o (Fig. 1527) of Host H (Fig. 429) and Solar Panel Controller Updating Software 20663c1o (Fig. 1518) of Communication Device 200, which update Solar Panel Controller 20663OSo stored in Operating System 20663OS (Fig. 1512) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a Solar Panel Controller Update Request, which is received by Host H (S1). Here, the Solar Panel Controller Update Request is a

request to send Solar Panel Controller Version Data H63b1o (Fig. 1525) stored in Host H to Communication Device 200. In response to the request, Host H retrieves Solar Panel Controller Version Data H63b1o from OS Version Data Storage Area H63b1 (Fig. 1525), and sends the data to Communication Device 200 (S2). Upon receiving Solar Panel Controller Version Data H63b1o from Host H (S3), CPU 211 compares Solar Panel Controller Version Data H63b1o with Solar Panel Controller Version Data 20663b1o stored in OS Version Data Storage Area 20663b1 (Fig. 1516) of Communication Device 200 (S4). Assuming that CPU211 detects in S4 that Solar Panel Controller Version Data 20663b1o of Communication Device 200 is of an old version. CPU 211 sends a New Solar Panel Controller Sending Request, which is received by Host H (S5). Here, the New Solar Panel Controller Sending Request is a request to send Solar Panel Controller H63OSo (Fig. 1521) stored in Host H to Communication Device 200. Host H retrieves Solar Panel Controller H63OSo (Fig. 1521), which is of the latest version, from Operating System Storage Area H63OS (Fig. 1521), and sends the controller to Communication Device 200 (S6). Upon receiving Solar Panel Controller H63OSo from Host H (S7), CPU 211

stores Solar Panel Controller H63OSo as Solar Panel Controller 20663OSo in Operating System 20663OS (Fig. 1512) (S8). The old version of Solar Panel Controller 20663OSo (Fig. 1512) is deleted.

[4121] Fig. 1558 illustrates Speaker Controller Updating Software H63c1p (Fig. 1527) of Host H (Fig. 429) and Speaker Controller Updating Software 20663c1p (Fig. 1518) of Communication Device 200, which update Speaker Controller 20663OSp stored in Operating System 20663OS (Fig. 1512) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves Speaker Controller Version Data 20663b1p from OS Version Data Storage Area 20663b1 (Fig. 1516) and sends the data to Host H (S1). Upon receiving Speaker Controller Version Data 20663b1p (Fig. 1516) from Communication Device 200 (S2), Host H compares Speaker Controller Version Data 20663b1p (Fig. 1516) with Speaker Controller Version Data H63b1p stored in OS Version Data Storage Area H63b1 (Fig. 1525) of Host H (S3). Assuming that Host H detects in S3 that Speaker Controller Version Data 20663b1p of Communication Device 200 is of an old version. Host H retrieves Speaker Controller H63OSp, which is of the latest version,

from Operating System Storage Area H63OS (Fig. 1521), and sends the controller to Communication Device 200 (S4). Upon receiving Speaker Controller H63OSp from Host H (S5), CPU 211 stores Speaker Controller H63OSp as Speaker Controller 20663OSp in Operating System 20663OS (Fig. 1512) (S6). The old version of Speaker Controller 20663OSp (Fig. 1512) is deleted.

[4122] Fig. 1559 illustrates another embodiment of Speaker Controller Updating Software H63c1p (Fig. 1527) of Host H (Fig. 429) and Speaker Controller Updating Software 20663c1p (Fig. 1518) of Communication Device 200, which update Speaker Controller 20663OSp stored in Operating System 20663OS (Fig. 1512) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a Speaker Controller Update Request, which is received by Host H (S1). Here, the Speaker Controller Update Request is a request to send Speaker Controller Version Data H63b1p (Fig. 1525) stored in Host H to Communication Device 200. In response to the request, Host H retrieves Speaker Controller Version Data H63b1p from OS Version Data Storage Area H63b1 (Fig. 1525), and sends the data to Communication Device 200 (S2). Upon receiving Speaker

Controller Version Data H63b1p from Host H (S3), CPU 211 compares Speaker Controller Version Data H63b1p with Speaker Controller Version Data 20663b1p stored in OS Version Data Storage Area 20663b1 (Fig. 1516) of Communication Device 200 (S4). Assuming that CPU211 detects in S4 that Speaker Controller Version Data 20663b1p of Communication Device 200 is of an old version. CPU 211 sends a New Speaker Controller Sending Request, which is received by Host H (S5). Here, the New Speaker Controller Sending Request is a request to send Speaker Controller H63OSp (Fig. 1521) stored in Host H to Communication Device 200. Host H retrieves Speaker Controller H63OSp (Fig. 1521), which is of the latest version, from Operating System Storage Area H63OS (Fig. 1521), and sends the controller to Communication Device 200 (S6). Upon receiving Speaker Controller H63OSp from Host H (S7), CPU 211 stores Speaker Controller H63OSp as Speaker Controller 20663OSp in Operating System 20663OS (Fig. 1512) (S8). The old version of Speaker Controller 20663OSp (Fig. 1512) is deleted.

[4123] Fig. 1560 illustrates Vibrator Controller Updating Software H63c1q (Fig. 1527) of Host H (Fig. 429) and Vibrator Controller Updating Software 20663c1q (Fig. 1518) of Com-

munication Device 200, which update Vibrator Controller 20663OSq stored in Operating System 20663OS (Fig. 1512) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves Vibrator Controller Version Data 20663b1q from OS Version Data Storage Area 20663b1 (Fig. 1516) and sends the data to Host H (S1). Upon receiving Vibrator Controller Version Data 20663b1q (Fig. 1516) from Communication Device 200 (S2), Host H compares Vibrator Controller Version Data 20663b1q (Fig. 1516) with Vibrator Controller Version Data H63b1q stored in OS Version Data Storage Area H63b1 (Fig. 1525) of Host H (S3). Assuming that Host H detects in S3 that Vibrator Controller Version Data 20663b1q of Communication Device 200 is of an old version. Host H retrieves Vibrator Controller H63OSq, which is of the latest version, from Operating System Storage Area H63OS (Fig. 1521), and sends the controller to Communication Device 200 (S4). Upon receiving Vibrator Controller H63OSq from Host H (S5), CPU 211 stores Vibrator Controller H63OSq as Vibrator Controller 20663OSq in Operating System 20663OS (Fig. 1512) (S6). The old version of Vibrator Controller 20663OSq (Fig. 1512) is deleted.

[4124] Fig. 1561 illustrates another embodiment of Vibrator Controller Updating Software H63c1q (Fig. 1527) of Host H (Fig. 429) and Vibrator Controller Updating Software 20663c1q (Fig. 1518) of Communication Device 200, which update Vibrator Controller 20663OSq stored in Operating System 20663OS (Fig. 1512) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a Vibrator Controller Update Request, which is received by Host H (S1). Here, the Vibrator Controller Update Request is a request to send Vibrator Controller Version Data H63b1q (Fig. 1525) stored in Host H to Communication Device 200. In response to the request, Host H retrieves Vibrator Controller Version Data H63b1q from OS Version Data Storage Area H63b1 (Fig. 1525), and sends the data to Communication Device 200 (S2). Upon receiving Vibrator Controller Version Data H63b1q from Host H (S3), CPU 211 compares Vibrator Controller Version Data H63b1q with Vibrator Controller Version Data 20663b1q stored in OS Version Data Storage Area 20663b1 (Fig. 1516) of Communication Device 200 (S4). Assuming that CPU211 detects in S4 that Vibrator Controller Version Data 20663b1q of Communication Device 200 is of an old ver-

sion. CPU 211 sends a New Vibrator Controller Sending Request, which is received by Host H (S5). Here, the New Vibrator Controller Sending Request is a request to send Vibrator Controller H63OSq (Fig. 1521) stored in Host H to Communication Device 200. Host H retrieves Vibrator Controller H63OSq (Fig. 1521), which is of the latest version, from Operating System Storage Area H63OS (Fig. 1521), and sends the controller to Communication Device 200 (S6). Upon receiving Vibrator Controller H63OSq from Host H (S7), CPU 211 stores Vibrator Controller H63OSq as Vibrator Controller 20663OSq in Operating System 20663OS (Fig. 1512) (S8). The old version of Vibrator Controller 20663OSq (Fig. 1512) is deleted.

[4125] Fig. 1562 illustrates Video Processor Controller Updating Software H63c1r (Fig. 1527) of Host H (Fig. 429) and Video Processor Controller Updating Software 20663c1r (Fig. 1518) of Communication Device 200, which update Video Processor Controller 20663OSr stored in Operating System 20663OS (Fig. 1512) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves Video Processor Controller Version Data 20663b1r from OS Version Data Storage Area 20663b1 (Fig. 1516) and sends the data to

Host H (S1). Upon receiving Video Processor Controller Version Data 20663b1r (Fig. 1516) from Communication Device 200 (S2), Host H compares Video Processor Controller Version Data 20663b1r (Fig. 1516) with Video Processor Controller Version Data H63b1r stored in OS Version Data Storage Area H63b1 (Fig. 1525) of Host H (S3). Assuming that Host H detects in S3 that Video Processor Controller Version Data 20663b1r of Communication Device 200 is of an old version. Host H retrieves Video Processor Controller H63OSr, which is of the latest version, from Operating System Storage Area H63OS (Fig. 1521), and sends the controller to Communication Device 200 (S4). Upon receiving Video Processor Controller H63OSr from Host H (S5), CPU 211 stores Video Processor Controller H63OSr as Video Processor Controller 20663OSr in Operating System 20663OS (Fig. 1512) (S6). The old version of Video Processor Controller 20663OSr (Fig. 1512) is deleted.

[4126] Fig. 1563 illustrates another embodiment of Video Processor Controller Updating Software H63c1r (Fig. 1527) of Host H (Fig. 429) and Video Processor Controller Updating Software 20663c1r (Fig. 1518) of Communication Device 200, which update Video Processor Controller 20663OSr

stored in Operating System 20663OS (Fig. 1512) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a Video Processor Controller Update Request, which is received by Host H (S1). Here, the Video Processor Controller Update Request is a request to send Video Processor Controller Version Data H63b1r (Fig. 1525) stored in Host H to Communication Device 200. In response to the request, Host H retrieves Video Processor Controller Version Data H63b1r from OS Version Data Storage Area H63b1 (Fig. 1525), and sends the data to Communication Device 200 (S2). Upon receiving Video Processor Controller Version Data H63b1r from Host H (S3), CPU 211 compares Video Processor Controller Version Data H63b1r with Video Processor Controller Version Data 20663b1r stored in OS Version Data Storage Area 20663b1 (Fig. 1516) of Communication Device 200 (S4). Assuming that CPU211 detects in S4 that Video Processor Controller Version Data 20663b1r of Communication Device 200 is of an old version. CPU 211 sends a New Video Processor Controller Sending Request, which is received by Host H (S5). Here, the New Video Processor Controller Sending Request is a request to send Video Processor Controller

H63OSr (Fig. 1521) stored in Host H to Communication Device 200. Host H retrieves Video Processor Controller H63OSr (Fig. 1521), which is of the latest version, from Operating System Storage Area H63OS (Fig. 1521), and sends the controller to Communication Device 200 (S6). Upon receiving Video Processor Controller H63OSr from Host H (S7), CPU 211 stores Video Processor Controller H63OSr as Video Processor Controller 20663OSr in Operating System 20663OS (Fig. 1512) (S8). The old version of Video Processor Controller 20663OSr (Fig. 1512) is deleted.

[4127] Fig. 1564 illustrates Wireless Receiver Controller Updating Software H63c1s (Fig. 1527) of Host H (Fig. 429) and Wireless Receiver Controller Updating Software 20663c1s (Fig. 1518) of Communication Device 200, which update Wireless Receiver Controller 20663OSs stored in Operating System 20663OS (Fig. 1512) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves Wireless Receiver Controller Version Data 20663b1s from OS Version Data Storage Area 20663b1 (Fig. 1516) and sends the data to Host H (S1). Upon receiving Wireless Receiver Controller Version Data 20663b1s (Fig. 1516) from Communication

Device 200 (S2), Host H compares Wireless Receiver Controller Version Data 20663b1s (Fig. 1516) with Wireless Receiver Controller Version Data H63b1s stored in OS Version Data Storage Area H63b1 (Fig. 1525) of Host H (S3). Assuming that Host H detects in S3 that Wireless Receiver Controller Version Data 20663b1s of Communication Device 200 is of an old version. Host H retrieves Wireless Receiver Controller H63OSs, which is of the latest version, from Operating System Storage Area H63OS (Fig. 1521), and sends the controller to Communication Device 200 (S4). Upon receiving Wireless Receiver Controller H63OSs from Host H (S5), CPU 211 stores Wireless Receiver Controller H63OSs as Wireless Receiver Controller 20663OSs in Operating System 20663OS (Fig. 1512) (S6). The old version of Wireless Receiver Controller 20663OSs (Fig. 1512) is deleted.

[4128] Fig. 1565 illustrates another embodiment of Wireless Receiver Controller Updating Software H63c1s (Fig. 1527) of Host H (Fig. 429) and Wireless Receiver Controller Updating Software 20663c1s (Fig. 1518) of Communication Device 200, which update Wireless Receiver Controller 20663OSs stored in Operating System 20663OS (Fig. 1512) of Communication Device 200. As described in the

present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a Wireless Receiver Controller Update Request#1, which is received by Host H (S1). Here, the Wireless Receiver Controller Update Request#1 is a request to send Wireless Receiver Controller Version Data H63b1s (Fig. 1525) stored in Host H to Communication Device 200. In response to the request, Host H retrieves Wireless Receiver Controller Version Data H63b1s from OS Version Data Storage Area H63b1 (Fig. 1525), and sends the data to Communication Device 200 (S2). Upon receiving Wireless Receiver Controller Version Data H63b1s from Host H (S3), CPU 211 compares Wireless Receiver Controller Version Data H63b1s with Wireless Receiver Controller Version Data 20663b1s stored in OS Version Data Storage Area 20663b1 (Fig. 1516) of Communication Device 200 (S4). Assuming that CPU211 detects in S4 that Wireless Receiver Controller Version Data 20663b1s of Communication Device 200 is of an old version. CPU 211 sends a New Wireless Receiver Controller Sending Request#1, which is received by Host H (S5). Here, the New Wireless Receiver Controller Sending Request#1 is a request to send Wireless Receiver Controller H63OSs (Fig. 1521) stored in Host H to Communication Device 200. Host H

retrieves Wireless Receiver Controller H63OSs (Fig. 1521), which is of the latest version, from Operating System Storage Area H63OS (Fig. 1521), and sends the controller to Communication Device 200 (S6). Upon receiving Wireless Receiver Controller H63OSs from Host H (S7), CPU 211 stores Wireless Receiver Controller H63OSs as Wireless Receiver Controller 20663OSs in Operating System 20663OS (Fig. 1512) (S8). The old version of Wireless Receiver Controller 20663OSs (Fig. 1512) is deleted.

[4129] Fig. 1566 illustrates Wireless Receiver Controller Updating Software H63c1t (Fig. 1527) of Host H (Fig. 429) and Wireless Receiver Controller Updating Software 20663c1t (Fig. 1518) of Communication Device 200, which update Wireless Receiver Controller 20663OSt stored in Operating System 20663OS (Fig. 1512) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves Wireless Receiver Controller Version Data 20663b1t from OS Version Data Storage Area 20663b1 (Fig. 1516) and sends the data to Host H (S1). Upon receiving Wireless Receiver Controller Version Data 20663b1t (Fig. 1516) from Communication Device 200 (S2), Host H compares Wireless Receiver Controller Version Data 20663b1t (Fig. 1516) with Wireless

Receiver Controller Version Data H63b1t stored in OS Version Data Storage Area H63b1 (Fig. 1525) of Host H (S3). Assuming that Host H detects in S3 that Wireless Receiver Controller Version Data 20663b1t of Communication Device 200 is of an old version. Host H retrieves Wireless Receiver Controller H63OSt, which is of the latest version, from Operating System Storage Area H63OS (Fig. 1521), and sends the controller to Communication Device 200 (S4). Upon receiving Wireless Receiver Controller H63OSt from Host H (S5), CPU 211 stores Wireless Receiver Controller H63OSt as Wireless Receiver Controller 20663OSt in Operating System 20663OS (Fig. 1512) (S6). The old version of Wireless Receiver Controller 20663OSt (Fig. 1512) is deleted.

[4130] Fig. 1567 illustrates another embodiment of Wireless Receiver Controller Updating Software H63c1t (Fig. 1527) of Host H (Fig. 429) and Wireless Receiver Controller Updating Software 20663c1t (Fig. 1518) of Communication Device 200, which update Wireless Receiver Controller 20663OSt stored in Operating System 20663OS (Fig. 1512) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a Wireless Receiver Controller Update Re-

quest#2, which is received by Host H (S1). Here, the Wireless Receiver Controller Update Request#2 is a request to send Wireless Receiver Controller Version Data H63b1t (Fig. 1525) stored in Host H to Communication Device 200. In response to the request, Host H retrieves Wireless Receiver Controller Version Data H63b1t from OS Version Data Storage Area H63b1 (Fig. 1525), and sends the data to Communication Device 200 (S2). Upon receiving Wireless Receiver Controller Version Data H63b1t from Host H (S3), CPU 211 compares Wireless Receiver Controller Version Data H63b1t with Wireless Receiver Controller Version Data 20663b1t stored in OS Version Data Storage Area 20663b1 (Fig. 1516) of Communication Device 200 (S4). Assuming that CPU211 detects in S4 that Wireless Receiver Controller Version Data 20663b1t of Communication Device 200 is of an old version. CPU 211 sends a New Wireless Receiver Controller Sending Request#2, which is received by Host H (S5). Here, the New Wireless Receiver Controller Sending Request#2 is a request to send Wireless Receiver Controller H63OSt (Fig. 1521) stored in Host H to Communication Device 200. Host H retrieves Wireless Receiver Controller H63OSt (Fig. 1521), which is of the latest version, from Operating System

Storage Area H63OS (Fig. 1521), and sends the controller to Communication Device 200 (S6). Upon receiving Wireless Receiver Controller H63OSt from Host H (S7), CPU 211 stores Wireless Receiver Controller H63OSt as Wireless Receiver Controller 20663OSt in Operating System 20663OS (Fig. 1512) (S8). The old version of Wireless Receiver Controller 20663OSt (Fig. 1512) is deleted.

[4131] Fig. 1568 illustrates Wireless Receiver Controller Updating Software H63c1u (Fig. 1527) of Host H (Fig. 429) and Wireless Receiver Controller Updating Software 20663c1u (Fig. 1518) of Communication Device 200, which update Wireless Receiver Controller 20663OSu stored in Operating System 20663OS (Fig. 1512) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves Wireless Receiver Controller Version Data 20663b1u from OS Version Data Storage Area 20663b1 (Fig. 1516) and sends the data to Host H (S1). Upon receiving Wireless Receiver Controller Version Data 20663b1u (Fig. 1516) from Communication Device 200 (S2), Host H compares Wireless Receiver Controller Version Data 20663b1u (Fig. 1516) with Wireless Receiver Controller Version Data H63b1u stored in OS Version Data Storage Area H63b1 (Fig. 1525) of Host H

(S3). Assuming that Host H detects in S3 that Wireless Receiver Controller Version Data 20663b1u of Communication Device 200 is of an old version. Host H retrieves Wireless Receiver Controller H63OSu, which is of the latest version, from Operating System Storage Area H63OS (Fig. 1521), and sends the controller to Communication Device 200 (S4). Upon receiving Wireless Receiver Controller H63OSu from Host H (S5), CPU 211 stores Wireless Receiver Controller H63OSu as Wireless Receiver Controller 20663OSu in Operating System 20663OS (Fig. 1512) (S6). The old version of Wireless Receiver Controller 20663OSu (Fig. 1512) is deleted.

[4132] Fig. 1569 illustrates another embodiment of Wireless Receiver Controller Updating Software H63c1u (Fig. 1527) of Host H (Fig. 429) and Wireless Receiver Controller Updating Software 20663c1u (Fig. 1518) of Communication Device 200, which update Wireless Receiver Controller 20663OSu stored in Operating System 20663OS (Fig. 1512) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a Wireless Receiver Controller Update Request#3, which is received by Host H (S1). Here, the Wireless Receiver Controller Update Request#3 is a request to

send Wireless Receiver Controller Version Data H63b1u (Fig. 1525) stored in Host H to Communication Device 200. In response to the request, Host H retrieves Wireless Receiver Controller Version Data H63b1u from OS Version Data Storage Area H63b1 (Fig. 1525), and sends the data to Communication Device 200 (S2). Upon receiving Wireless Receiver Controller Version Data H63b1u from Host H (S3), CPU 211 compares Wireless Receiver Controller Version Data H63b1u with Wireless Receiver Controller Version Data 20663b1u stored in OS Version Data Storage Area 20663b1 (Fig. 1516) of Communication Device 200 (S4). Assuming that CPU211 detects in S4 that Wireless Receiver Controller Version Data 20663b1u of Communication Device 200 is of an old version. CPU 211 sends a New Wireless Receiver Controller Sending Request#3, which is received by Host H (S5). Here, the New Wireless Receiver Controller Sending Request#3 is a request to send Wireless Receiver Controller H63OSu (Fig. 1521) stored in Host H to Communication Device 200. Host H retrieves Wireless Receiver Controller H63OSu (Fig. 1521), which is of the latest version, from Operating System Storage Area H63OS (Fig. 1521), and sends the controller to Communication Device 200 (S6). Upon receiving Wire-

less Receiver Controller H63OSu from Host H (S7), CPU 211 stores Wireless Receiver Controller H63OSu as Wireless Receiver Controller 20663OSu in Operating System 20663OS (Fig. 1512) (S8). The old version of Wireless Receiver Controller 20663OSu (Fig. 1512) is deleted.

[4133] Fig. 1570 illustrates Wireless Transmitter Controller Updating Software H63c1v (Fig. 1527) of Host H (Fig. 429) and Wireless Transmitter Controller Updating Software 20663c1v (Fig. 1518) of Communication Device 200, which update Wireless Transmitter Controller 20663OSv stored in Operating System 20663OS (Fig. 1512) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves Wireless Transmitter Controller Version Data 20663b1v from OS Version Data Storage Area 20663b1 (Fig. 1516) and sends the data to Host H (S1). Upon receiving Wireless Transmitter Controller Version Data 20663b1v (Fig. 1516) from Communication Device 200 (S2), Host H compares Wireless Transmitter Controller Version Data 20663b1v (Fig. 1516) with Wireless Transmitter Controller Version Data H63b1v stored in OS Version Data Storage Area H63b1 (Fig. 1525) of Host H (S3). Assuming that Host H detects in S3 that Wireless Trans-

mitter Controller Version Data 20663b1v of Communication Device 200 is of an old version. Host H retrieves Wireless Transmitter Controller H63OSv, which is of the latest version, from Operating System Storage Area H63OS (Fig. 1521), and sends the controller to Communication Device 200 (S4). Upon receiving Wireless Transmitter Controller H63OSv from Host H (S5), CPU 211 stores Wireless Transmitter Controller H63OSv as Wireless Transmitter Controller 20663OSv in Operating System 20663OS (Fig. 1512) (S6). The old version of Wireless Transmitter Controller 20663OSv (Fig. 1512) is deleted.

[4134] Fig. 1571 illustrates another embodiment of Wireless Transmitter Controller Updating Software H63c1v (Fig. 1527) of Host H (Fig. 429) and Wireless Transmitter Controller Updating Software 20663c1v (Fig. 1518) of Communication Device 200, which update Wireless Transmitter Controller 20663OSv stored in Operating System 20663OS (Fig. 1512) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a Wireless Transmitter Controller Update Request#1, which is received by Host H (S1). Here, the Wireless Transmitter Controller Update Request#1 is a request to send Wireless Transmitter Controller Version

Data H63b1v (Fig. 1525) stored in Host H to Communication Device 200. In response to the request, Host H retrieves Wireless Transmitter Controller Version Data H63b1v from OS Version Data Storage Area H63b1 (Fig. 1525), and sends the data to Communication Device 200 (S2). Upon receiving Wireless Transmitter Controller Version Data H63b1v from Host H (S3), CPU 211 compares Wireless Transmitter Controller Version Data H63b1v with Wireless Transmitter Controller Version Data 20663b1v stored in OS Version Data Storage Area 20663b1 (Fig. 1516) of Communication Device 200 (S4). Assuming that CPU211 detects in S4 that Wireless Transmitter Controller Version Data 20663b1v of Communication Device 200 is of an old version. CPU 211 sends a New Wireless Transmitter Controller Sending Request#1, which is received by Host H (S5). Here, the New Wireless Transmitter Controller Sending Request#1 is a request to send Wireless Transmitter Controller H63OSv (Fig. 1521) stored in Host H to Communication Device 200. Host H retrieves Wireless Transmitter Controller H63OSv (Fig. 1521), which is of the latest version, from Operating System Storage Area H63OS (Fig. 1521), and sends the controller to Communication Device 200 (S6). Upon receiving Wireless Transmitter Con-

troller H63OSv from Host H (S7), CPU 211 stores Wireless Transmitter Controller H63OSv as Wireless Transmitter Controller 20663OSv in Operating System 20663OS (Fig. 1512) (S8). The old version of Wireless Transmitter Controller 20663OSv (Fig. 1512) is deleted.

[4135] Fig. 1572 illustrates Wireless Transmitter Controller Updating Software H63c1w (Fig. 1527) of Host H (Fig. 429) and Wireless Transmitter Controller Updating Software 20663c1w (Fig. 1518) of Communication Device 200, which update Wireless Transmitter Controller 20663OSw stored in Operating System 20663OS (Fig. 1512) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves Wireless Transmitter Controller Version Data 20663b1w from OS Version Data Storage Area 20663b1 (Fig. 1516) and sends the data to Host H (S1). Upon receiving Wireless Transmitter Controller Version Data 20663b1w (Fig. 1516) from Communication Device 200 (S2), Host H compares Wireless Transmitter Controller Version Data 20663b1w (Fig. 1516) with Wireless Transmitter Controller Version Data H63b1w stored in OS Version Data Storage Area H63b1 (Fig. 1525) of Host H (S3). Assuming that Host H detects in S3 that Wireless Trans-

mitter Controller Version Data 20663b1w of Communication Device 200 is of an old version. Host H retrieves Wireless Transmitter Controller H63OSw, which is of the latest version, from Operating System Storage Area H63OS (Fig. 1521), and sends the controller to Communication Device 200 (S4). Upon receiving Wireless Transmitter Controller H63OSw from Host H (S5), CPU 211 stores Wireless Transmitter Controller H63OSw as Wireless Transmitter Controller 20663OSw in Operating System 20663OS (Fig. 1512) (S6). The old version of Wireless Transmitter Controller 20663OSw (Fig. 1512) is deleted.

[4136] Fig. 1573 illustrates another embodiment of Wireless Transmitter Controller Updating Software H63c1w (Fig. 1527) of Host H (Fig. 429) and Wireless Transmitter Controller Updating Software 20663c1w (Fig. 1518) of Communication Device 200, which update Wireless Transmitter Controller 20663OSw stored in Operating System 20663OS (Fig. 1512) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a Wireless Transmitter Controller Update Request#2, which is received by Host H (S1). Here, the Wireless Transmitter Controller Update Request#2 is a request to send Wireless Transmitter Con-

troller Version Data H63b1w (Fig. 1525) stored in Host H to Communication Device 200. In response to the request, Host H retrieves Wireless Transmitter Controller Version Data H63b1w from OS Version Data Storage Area H63b1 (Fig. 1525), and sends the data to Communication Device 200 (S2). Upon receiving Wireless Transmitter Controller Version Data H63b1w from Host H (S3), CPU 211 compares Wireless Transmitter Controller Version Data H63b1w with Wireless Transmitter Controller Version Data 20663b1w stored in OS Version Data Storage Area 20663b1 (Fig. 1516) of Communication Device 200 (S4). Assuming that CPU211 detects in S4 that Wireless Transmitter Controller Version Data 20663b1w of Communication Device 200 is of an old version. CPU 211 sends a New Wireless Transmitter Controller Sending Request#2, which is received by Host H (S5). Here, the New Wireless Transmitter Controller Sending Request#2 is a request to send Wireless Transmitter Controller H63OSw (Fig. 1521) stored in Host H to Communication Device 200. Host H retrieves Wireless Transmitter Controller H63OSw (Fig. 1521), which is of the latest version, from Operating System Storage Area H63OS (Fig. 1521), and sends the controller to Communication Device 200 (S6). Upon receiving Wire-

less Transmitter Controller H63OSw from Host H (S7), CPU 211 stores Wireless Transmitter Controller H63OSw as Wireless Transmitter Controller 20663OSw in Operating System 20663OS (Fig. 1512) (S8). The old version of Wireless Transmitter Controller 20663OSw (Fig. 1512) is deleted.

[4137] Fig. 1574 illustrates Wireless Transmitter Controller Updating Software H63c1x (Fig. 1527) of Host H (Fig. 429) and Wireless Transmitter Controller Updating Software 20663c1x (Fig. 1518) of Communication Device 200, which update Wireless Transmitter Controller 20663OSx stored in Operating System 20663OS (Fig. 1512) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves Wireless Transmitter Controller Version Data 20663b1x from OS Version Data Storage Area 20663b1 (Fig. 1516) and sends the data to Host H (S1). Upon receiving Wireless Transmitter Controller Version Data 20663b1x (Fig. 1516) from Communication Device 200 (S2), Host H compares Wireless Transmitter Controller Version Data 20663b1x (Fig. 1516) with Wireless Transmitter Controller Version Data H63b1x stored in OS Version Data Storage Area H63b1 (Fig. 1525) of Host H (S3).

Assuming that Host H detects in S3 that Wireless Transmitter Controller Version Data 20663b1x of Communication Device 200 is of an old version. Host H retrieves Wireless Transmitter Controller H63OSx, which is of the latest version, from Operating System Storage Area H63OS (Fig. 1521), and sends the controller to Communication Device 200 (S4). Upon receiving Wireless Transmitter Controller H63OSx from Host H (S5), CPU 211 stores Wireless Transmitter Controller H63OSx as Wireless Transmitter Controller 20663OSx in Operating System 20663OS (Fig. 1512) (S6). The old version of Wireless Transmitter Controller 20663OSx (Fig. 1512) is deleted.

[4138] Fig. 1575 illustrates another embodiment of Wireless Transmitter Controller Updating Software H63c1x (Fig. 1527) of Host H (Fig. 429) and Wireless Transmitter Controller Updating Software 20663c1x (Fig. 1518) of Communication Device 200, which update Wireless Transmitter Controller 20663OSx stored in Operating System 20663OS (Fig. 1512) of Communication Device 200. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a Wireless Transmitter Controller Update Request#3, which is received by Host H (S1). Here, the Wireless Transmitter Controller Update Re-

quest#3 is a request to send Wireless Transmitter Controller Version Data H63b1x (Fig. 1525) stored in Host H to Communication Device 200. In response to the request, Host H retrieves Wireless Transmitter Controller Version Data H63b1x from OS Version Data Storage Area H63b1 (Fig. 1525), and sends the data to Communication Device 200 (S2). Upon receiving Wireless Transmitter Controller Version Data H63b1x from Host H (S3), CPU 211 compares Wireless Transmitter Controller Version Data H63b1x with Wireless Transmitter Controller Version Data 20663b1x stored in OS Version Data Storage Area 20663b1 (Fig. 1516) of Communication Device 200 (S4). Assuming that CPU211 detects in S4 that Wireless Transmitter Controller Version Data 20663b1x of Communication Device 200 is of an old version. CPU 211 sends a New Wireless Transmitter Controller Sending Request#3, which is received by Host H (S5). Here, the New Wireless Transmitter Controller Sending Request#3 is a request to send Wireless Transmitter Controller H63OSx (Fig. 1521) stored in Host H to Communication Device 200. Host H retrieves Wireless Transmitter Controller H63OSx (Fig. 1521), which is of the latest version, from Operating System Storage Area H63OS (Fig. 1521), and sends the controller to Com-

munication Device 200 (S6). Upon receiving Wireless Transmitter Controller H63OSx from Host H (S7), CPU 211 stores Wireless Transmitter Controller H63OSx as Wireless Transmitter Controller 20663OSx in Operating System 20663OS (Fig. 1512) (S8). The old version of Wireless Transmitter Controller 20663OSx (Fig. 1512) is deleted.

[4139] As another embodiment, each and all data and software programs described in this specification stored in Communication Device 200 may be updated in the manner described hereinbefore.

[4140] For the avoidance of doubt, the present function may be utilized to repair the operating system of Communication Device 200, i.e., Operating System 20663OS (Figs. 1511 and 1512) in the form of downloading updates.

[4141] *<<OS Updating Function -- Summary>>*

[4142] (1) A communication device comprising a microphone, a speaker, a display, an input device, an operating system, and a multiple mode implementor, wherein said multiple mode implementor implements a voice communication mode and an OS updating mode, a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, said operating system is updated

when said OS updating mode is implemented.

[4143] (2) An OS updating system comprising a host computer and a communication device, wherein said communication device comprises a microphone, a speaker, a display, an input device, an antenna, and an operating system, said operating system comprises an OS element, said host computer stores an updated OS element, said updated OS element is sent from said host computer and received by said communication device via said antenna, said operating system is updated by installing said updated OS element.

[4144] *<<Device Managing Function>>*

[4145] Figs. 1576 through 1587 illustrate the device managing function which enables the user of Communication Device 200 to manage, such as to add and delete device controllers attached to or installed in Communication Device 200.

[4146] Fig. 1576 illustrates the storage area included in RAM 206 (Fig. 1). As described in the present drawing, RAM 206 includes Device Managing Information Storage Area 20664a of which the data and the software programs stored therein are described in Fig. 1577.

[4147] Fig. 1577 illustrates the storage areas included in Device

Managing Information Storage Area 20664a (Fig. 1576). As described in the present drawing, Device Managing Information Storage Area 20664a includes Device Managing Data Storage Area 20664b and Device Managing Software Storage Area 20664c. Device Managing Data Storage Area 20664b stores the data necessary to implement the present function, such as the ones described in Figs. 1578 through 1581. Device Managing Software Storage Area 20664c stores the software programs necessary to implement the present function, such as the ones described in Fig. 1582.

[4148] Fig. 1578 illustrates the storage areas included in Device Managing Data Storage Area 20664b (Fig. 1577). As described in the present drawing, Device Managing Data Storage Area 20664b includes Device Controller Data Storage Area 20664b1, Device Image Data Storage Area 20664b2, and Device Image Location Data Storage Area 20664b3. Device Controller Data Storage Area 20664b1 stores the data described in Fig. 1579. Device Image Data Storage Area 20664b2 stores the data described in Fig. 1580. Device Image Location Data Storage Area 20664b3 stores the data described in Fig. 1581.

[4149] Fig. 1579 illustrates the data stored in Device Controller

Data Storage Area 20664b1 (Fig. 1578). As described in the present drawing, Device Controller Data Storage Area 20664b1 comprises two columns, i.e., 'Device Controller ID' and 'Device Controller Data'. Column 'Device Controller ID' stores the device controller IDs, and each device controller ID is an identification of the corresponding device controller data stored in column 'Device Controller Data'. Column 'Device Controller Data' stores the device controller data, and each device controller data is a controller which controls the corresponding device attached to or installed in Communication Device 200. In the example described in the present drawing, Device Controller Data Storage Area 20664b1 stores the following data: the device controller ID 'Device Controller#1' and the corresponding device controller data 'Device Controller Data#1'; the device controller ID 'Device Controller#2' and the corresponding device controller data 'Device Controller Data#2'; the device controller ID 'Device Controller#3' and the corresponding device controller data 'Device Controller Data#3'; the device controller ID 'Device Controller#4' and the corresponding device controller data 'Device Controller Data#4'; and the device controller ID 'Device Controller#5' and the corresponding device con-

troller data 'Device Controller Data#5'. Here, the device control data may be of any controller which controls the corresponding device attached to or installed in Communication Device 200. Therefore, the device control data stored in Device Controller Data Storage Area 20664b1 may include the controllers described in Figs. 1511 and 1512, i.e., Battery Controller 20663OSa, CCD Unit Controller 20663OSb, Flash Light Unit Controller 20663OSc, Indicator Controller 20663OSd, Input Device Controller 20663OSe, LCD Controller 20663OSf, LED Controller 20663OSg, Memory Card Interface Controller 20663OSh, Microphone Controller 20663OSi, Photometer Controller 20663OSj, RAM Controller 20663OSk, ROM Controller 20663OSl, Signal Processor Controller 20663OSm, Signal Processor Controller 20663OSn, Solar Panel Controller 20663OSo, Speaker Controller 20663OSp, Vibrator Controller 20663OSq, Video Processor Controller 20663OSr, Wireless Receiver Controller 20663OSs, Wireless Receiver Controller 20663OSt, Wireless Receiver Controller 20663OSu, Wireless Transmitter Controller 20663OSv, Wireless Transmitter Controller 20663OSw, and Wireless Transmitter Controller 20663OSx.

[4150] Fig. 1580 illustrates the data stored in Device Image Data

Storage Area 20664b2 (Fig. 1578). As described in the present drawing, Device Image Data Storage Area 20664b2 comprises two columns, i.e., 'Device Controller ID' and 'Device Image Data'. Column 'Device Controller ID' stores the device controller IDs described hereinbefore. Column 'Device Image Data ' stores the device image data, and each device image data is an image data designed to be displayed on LCD 201 (Fig. 1) which is unique to the device control data of the corresponding device control ID. In the example described in the present drawing, Device Image Data Storage Area 20664b2 stores the following data: the device controller ID 'Device Controller#1' and the corresponding device image data 'Device Image Data#1'; the device controller ID 'Device Controller#2' and the corresponding device image data 'Device Image Data#2'; the device controller ID 'Device Controller#3' and the corresponding device image data 'Device Image Data#3'; the device controller ID 'Device Controller#4' and the corresponding device image data 'Device Image Data#4'; and the device controller ID 'Device Controller#5' and the corresponding device image data 'Device Image Data#5'.

[4151] Fig. 1581 illustrates the data stored in Device Image Loca-

tion Data Storage Area 20664b3 (Fig. 1578). As described in the present drawing, Device Image Location Data Storage Area 20664b3 comprises two columns, i.e., 'Device Controller ID' and 'Device Image Location Data'. Column 'Device Controller ID' stores the device controller IDs described hereinbefore. Column 'Device Image Location Data' stores the device image location data, and each device image location data represents the location data in (x,y) format at which the device image data of the corresponding device controller ID is displayed on LCD 201 (Fig. 1). In the example described in the present drawing, Device Image Location Data Storage Area 20664b3 stores the following data: the device controller ID 'Device Controller#1' and the corresponding device image location data 'Device Image Location Data#1'; the device controller ID 'Device Controller#2' and the corresponding device image location data 'Device Image Location Data#2'; the device controller ID 'Device Controller#3' and the corresponding device image location data 'Device Image Location Data#3'; the device controller ID 'Device Controller#4' and the corresponding device image location data 'Device Image Location Data#4'; and the device controller ID 'Device Controller#5' and the corresponding device image lo-

cation data 'Device Image Location Data#5'.

[4152] Fig. 1582 illustrates the software programs stored in Device Managing Software Storage Area 20664c (Fig. 1577). As described in the present drawing, Device Managing Software Storage Area 20664c stores Device Controller Displaying Software 20664c1, Device Controller Adding Software 20664c2, and Device Controller Deleting Software 20664c3. Device Controller Displaying Software 20664c1 is the software program described in Fig. 1585. Device Controller Adding Software 20664c2 is the software program described in Fig. 1586. Device Controller Deleting Software 20664c3 is the software program described in Fig. 1587.

[4153] Fig. 1583 illustrates the device image data displayed on LCD 201 (Fig. 1). As described in the present drawing, five device image data, i.e., Device Image Data#1 through #5 are displayed on LCD 201, each of which at the predetermined location.

[4154] Fig. 1584 illustrates the device image data displayed on LCD 201 (Fig. 1). As described in the present drawing, four device image data, i.e., Device Image Data#1 through #4 are displayed on LCD 201, each of which at the predetermined location.

[4155] Fig. 1585 illustrates Device Controller Displaying Software 20664c1 (Fig. 1582), which displays the device image data on LCD 201 (Fig. 1) of Communication Device 200. The foregoing software program may be initiated either automatically by CPU 211 (Fig. 1) or manually by the user of Communication Device 200. Referring to the present drawing, CPU 211 (Fig. 1) retrieves the device controller IDs from Device Controller Data Storage Area 20664b1 (Fig. 1579) (S1). CPU 211 Retrieves the device image location data of the corresponding device controller IDs retrieved in S1 from Device Image Location Data Storage Area 20664b3 (Fig. 1581) (S2). CPU 211 retrieves the device image data of the corresponding device controller IDs retrieved in S1 from Device Image Data Storage Area 20664b2 (Fig. 1580) (S3). CPU 211 then displays on LCD 201 the device image data retrieved in S3 at the location identified by device image location data retrieved in S2 as described in Fig. 1583 (S4).

[4156] Fig. 1586 illustrates Device Controller Adding Software 20664c2 (Fig. 1582), which adds a new device controller data to Communication Device 200. Assume that Device Controller Data#1 through #4 are currently stored in Device Controller Data Storage Area 20664b1 (Fig. 1579)

and a new Device Controller Data#5 is about to be stored therein by executing Device Controller Adding Software 20664c2. The foregoing software program may be initiated either automatically by CPU 211 (Fig. 1) or manually by the user of Communication Device 200. Referring to the present drawing, CPU 211 (Fig. 1) adds a new device controller ID (for example, Device Controller#5) in Device Controller Data Storage Area 20664b1 (Fig. 1579) (S1). CPU 211 adds a new device controller data (for example, Device Controller Data#5) in column 'Device Controller Data' of Device Controller Data Storage Area 20664b1 (Fig. 1579) at the corresponding device controller ID created in S1 (S2). Here, the new device controller data to be added may be identified by either automatically by CPU 211 (Fig. 1) or manually by the user of Communication Device 200. CPU 211 adds the new device controller ID described in S1 (for example, Device Controller#5) in Device Image Data Storage Area 20664b2 (Fig. 1580) (S3). CPU 211 adds a new device image data (for example, Device Image Data#5) unique to the corresponding device controller data in column 'Device Image Data' of Device Image Data Storage Area 20664b2 (Fig. 1580) at the corresponding device controller ID created In S3 (S4). CPU

211 adds the new device controller ID described in S1 (for example, Device Controller#5) in Device Image Location Data Storage Area 20664b3 (Fig. 1581) (S5). CPU 211 adds the new device image location data (for example, Device Image Location Data#5) in column 'Device Image Location Data' of Device Image Location Data Storage Area 20664b3 (Fig. 1581) at the corresponding device controller ID created in S5 (S6). CPU 211 then executes Device Controller Displaying Software 20664c1 (Fig. 1585) to update the display (S7). The device image data (including Device Image Data#5) are displayed on LCD 201 in the manner described in Fig. 1583 thereafter.

[4157] Fig. 1587 illustrates Device Controller Deleting Software 20664c3 (Fig. 1582), which deletes a device control data from Communication Device 200. Assume that Device Controller Data#1 through #5 are currently stored in Device Controller Data Storage Area 20664b1 (Fig. 1579) and Device Controller Data#5 is about to be deleted therefrom by executing Device Controller Deleting Software 20664c3. The foregoing software program may be initiated either automatically by CPU 211 (Fig. 1) or manually by the user of Communication Device 200. Referring to the present drawing, the user of Communication Device

200, by utilizing Input Device 210 (Fig. 1) or via voice recognition system, selects a device image data (for example, Device Image Data#5) from the ones displayed on LCD 201. CPU 211 identifies the device controller ID (for example, Device Controller#5) of the corresponding device image data (for example Device Image Data#5) (S2). CPU 211 deletes the device controller ID (for example, Device Controller#5) identified in S2 and the corresponding device controller data (for example, Device Controller Data#5) stored in Device Controller Data Storage Area 20664b1 (Fig. 1579) (S3). CPU 211 deletes the device controller ID (for example, Device Controller#5) and the corresponding device image data (for example, Device Image Data#5) stored in Device Image Data Storage Area 20664b2 (Fig. 1580) (S4). CPU 211 deletes the device controller ID (for example, Device Controller#5) and the corresponding device image location data (for example, Device Image Location Data#5) stored in Device Image Location Data Storage Area 20664b3 (Fig. 1581) (S5). CPU 211 then executes Device Controller Displaying Software 20664c1 (Fig. 1585) to update the display (S6). The device image data (excluding Device Image Data#5) are displayed on LCD 201 in the manner described in Fig. 1584 there-

after.

[4158] *<<Device Managing Function -- Summary>>*

[4159] (1) A communication device comprising a microphone, a speaker, a display, an input device, a storage area, and a multiple mode implementer, wherein said storage area stores a plurality of device controllers, said multiple mode implementer implements a voice communication mode and a device managing mode, a series of audio data are input to and output from said microphone and said speaker respectively when said voice communication mode is implemented, said plurality of device controllers are displayed on said display when said device managing mode is implemented.

[4160] (2) The communication device of summary (1), wherein a new device controller is added to said storage area, and said plurality of device controllers including said new device controller are displayed on said display.

[4161] (3) The communication device of summary (1), wherein a selected device controller is selected from said plurality of device controllers by utilizing said input device, said selected device controller is deleted from said storage area, and said plurality of device controllers excluding said selected device controller are displayed on said display.

[4162] *<<Automobile Controlling Function>>*

[4163] Figs. 1588 through 1627 illustrate the automobile controlling function which enables Communication Device 200 to remotely control an automobile in a wireless fashion via Antenna 218 (Fig. 1).

[4164] Fig. 1588 illustrates the storage area included in Automobile 835, i.e., an automobile or a car. As described in the present drawing, Automobile 835 includes Automobile Controlling Information Storage Area 83565a of which the data and the software programs stored therein are described in Fig. 1589.

[4165] The data and software programs stored in Automobile Controlling Information Storage Area 83565a (Fig. 1588) are downloaded from Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[4166] Fig. 1589 illustrates the storage areas included in Automobile Controlling Information Storage Area 83565a (Fig. 1588). As described in the present drawing, Automobile Controlling Information Storage Area 83565a includes Automobile Controlling Data Storage Area 83565b and Automobile Controlling Software Storage Area 83565c. Automobile Controlling Data Storage Area 83565b stores the data necessary to implement the present function on the

side of Automobile 835 (Fig. 1588), such as the ones described in Figs. 1590 through 1596. Automobile Controlling Software Storage Area 83565c stores the software programs necessary to implement the present function on the side of Automobile 835, such as the ones described in Fig. 1597.

[4167] Fig. 1590 illustrates the storage areas included in Automobile Controlling Data Storage Area 83565b (Fig. 1589). As described in the present drawing, Automobile Controlling Data Storage Area 83565b includes User Acess Data Storage Area 83565b1, Window Data Storage Area 83565b2, Door Data Storage Area 83565b3, Radio Channel Data Storage Area 83565b4, TV Channel Data Storage Area 83565b5, Blinker Data Storage Area 83565b6, and Work Area 83565b7. User Acess Data Storage Area 83565b1 stores the data described in Fig. 1591. Window Data Storage Area 83565b2 stores the data described in Fig. 1592. Door Data Storage Area 83565b3 stores the data described in Fig. 1593. Radio Channel Data Storage Area 83565b4 stores the data described in Fig. 1594. TV Channel Data Storage Area 83565b5 stores the data described in Fig. 1595. Blinker Data Storage Area 83565b6 stores the data described in Fig. 1596. Work Area

83565b7 is utilized as a work area to perform calculation and temporarily store data. The data stored in Automobile Controlling Data Storage Area 83565b excluding the ones stored in User Acess Data Storage Area 83565b1 and Work Area 83565b7 are primarily utilized for reinstallation, i.e., to reinstall the data to Communication Device 200 as described hereinafter in case the data stored in Communication Device 200 are corrupted or lost.

[4168] Fig. 1591 illustrates the data stored in User Acess Data Storage Area 83565b1 (Fig. 1590). As described in the present drawing, User Acess Data Storage Area 83565b1 comprises two columns, i.e., 'User ID' and 'Password Data'. Column 'User ID' stores the user IDs, and each user ID is an identification of the user of Communication Device 200 authorized to implement the present function. Column 'Password Data' stores the password data, and each password data represents the password set by the user of the corresponding user ID. The password data is composed of alphanumeric data. In the example described in the present drawing, User Acess Data Storage Area 83565b1 stores the following data: the user ID 'User#1' and the corresponding password data 'Password Data#1'; the user ID 'User#2' and the corresponding password data 'Pass-

word Data#2'; the user ID 'User#3' and the corresponding password data 'Password Data#3'; and the user ID 'User#4' and the corresponding password data 'Password Data#4'. According to the present example, the users represented by User#1 through #4 are authorized to implement the present function.

[4169] Fig. 1592 illustrates the data stored in Window Data Storage Area 83565b2 (Fig. 1590). As described in the present drawing, Window Data Storage Area 83565b2 comprises two columns, i.e., 'Window ID' and 'Window Data'. Column 'Window ID' stores the window IDs, and each window ID is an identification of the window (not shown) of Automobile 835 (Fig. 1588). Column 'Window Data' stores the window data, and each window data is the image data designed to be displayed on LCD 201 (Fig. 1) which represents the postion of the window (not shown) of the corresponding window ID. In the example described in the present drawing, Window Data Storage Area 83565b2 stores the following data: the window ID 'Window#1' and the corresponding window data 'Window Data#1'; the window ID 'Window#2' and the corresponding window data 'Window Data#2'; the window ID 'Window#3' and the corresponding window data 'Window Data#3'; and the window ID 'Win-

dow#4' and the corresponding window data 'Window Data#4'. Four windows of Automobile 835 which are represented by the window IDs, 'Window#1' through 'Window#4', are remotely controlable by implementing the present function.

[4170] Fig. 1593 illustrates the data stored in Door Data Storage Area 83565b3 (Fig. 1590). As described in the present drawing, Door Data Storage Area 83565b3 comprises two columns, i.e., 'Door ID' and 'Door Data'. Column 'Door ID' stores the door IDs, and each door ID is an identification of the door (not shown) of Automobile 835 (Fig. 1588). Column 'Door Data' stores the door data, and each door data is the image data designed to be displayed on LCD 201 (Fig. 1) which represents the postion of the door (not shown) of the corresponding door ID. In the example described in the present drawing, Door Data Storage Area 83565b3 stores the following data: the door ID 'Door#1' and the corresponding door data 'Door Data#1'; the door ID 'Door#2' and the corresponding door data 'Door Data#2'; the door ID 'Door#3' and the corresponding door data 'Door Data#3'; and the door ID 'Door#4' and the corresponding door data 'Door Data#4'. Four doors of Automobile 835 which are represented by the door IDs,

'Door#1' through 'Door#4', are remotely controlable by implementing the present function.

[4171] Fig. 1594 illustrates the data stored in Radio Channel Data Storage Area 83565b4 (Fig. 1590). As described in the present drawing, Radio Channel Data Storage Area 83565b4 comprises two columns, i.e., 'Radio Channel ID' and 'Radio Channel Data'. Column 'Radio Channel ID' stores the radio channel IDs, and each radio channel ID is an identification of the radio channel (not shown) playable by the radio (not shown) installed in Automobile 835 (Fig. 1588). Column 'Radio Channel Data' stores the radio channel data, and each radio channel data is the image data designed to be displayed on LCD 201 (Fig. 1) which represents the radio channel (not shown) of the corresponding radio channel ID. In the example described in the present drawing, Radio Channel Data Storage Area 83565b4 stores the following data: the radio channel ID 'Radio Channel#1' and the corresponding radio channel data 'Radio Channel Data#1'; the radio channel ID 'Radio Channel#2' and the corresponding radio channel data 'Radio Channel Data#2'; the radio channel ID 'Radio Channel#3' and the corresponding radio channel data 'Radio Channel Data#3'; and the radio channel ID 'Radio Chan-

nel#4' and the corresponding radio channel data 'Radio Channel Data#4'. Four radio channels which are represented by the radio channel IDs, 'Radio Channel#1' through 'Radio Channel#4', are remotely controlable by implementing the present invention.

[4172] Fig. 1595 illustrates the data stored in TV Channel Data Storage Area 83565b5 (Fig. 1590). As described in the present drawing, TV Channel Data Storage Area 83565b5 comprises two columns, i.e., 'TV Channel ID' and 'TV Channel Data'. Column 'TV Channel ID' stores the TV channel IDs, and each TV channel ID is an identification of the TV channel (not shown) playable by the TV (not shown) installed in Automobile 835 (Fig. 1588). Column 'TV Channel Data' stores the TV channel data, and each TV channel data is the image data designed to be displayed on LCD 201 (Fig. 1) which represents the TV channel (not shown) of the corresponding TV channel ID. In the example described in the present drawing, TV Channel Data Storage Area 83565b5 stores the following data: the TV channel ID 'TV Channel#1' and the corresponding TV channel data 'TV Channel Data#1'; the TV channel ID 'TV Channel#2' and the corresponding TV channel data 'TV Channel Data#2'; the TV channel ID 'TV Channel#3' and

the corresponding TV channel data 'TV Channel Data#3'; and the TV channel ID 'TV Channel#4' and the corresponding TV channel data 'TV Channel Data#4'. Four TV channels which are represented by the TV channel IDs, 'TV Channel#1' through 'TV Channel#4', are remotely controlable by implementing the present invention.

[4173] Fig. 1596 illustrates the data stored in Blinker Data Storage Area 83565b6 (Fig. 1590). As described in the present drawing, Blinker Data Storage Area 83565b6 comprises two columns, i.e., 'Blinker ID' and 'Blinker Data'. Column 'Blinker ID' stores the blinker IDs, and each blinker ID is an identification of the blinker (not shown) of Automobile 835 (Fig. 1588). Column 'Blinker Data' stores the blinker data, and each blinker data is the image data designed to be displayed on LCD 201 (Fig. 1) which represents the blinker (not shown) of the corresponding blinker ID. In the example described in the present drawing, Blinker Data Storage Area 83565b6 stores the following data: the blinker ID "Blinker#1' and the corresponding blinker data "Blinker Data#1'; and the blinker ID "Blinker#2' and the corresponding blinker data "Blinker Data#2'. Two blinkers which are represented by the blinker IDs, 'Blinker#1' and 'Blinker#2', are remotely controlable by implementing the

present invention. Here, the blinker (not shown) represented by "Blinker#1' is the right blinker and the blinker (not shown) represented by "Blinker#2' is the left blinker.

[4174] Fig. 1597 illustrates the storage areas included in Automobile Controlling Software Storage Area 83565c (Fig. 1589). As described in the present drawing, Automobile Controlling Software Storage Area 83565c includes Automobile Controller Storage Area 83565c1 and Remote Controlling Software Storage Area 83565c2. Automobile Controller Storage Area 83565c1 stores the controllers described in Fig. 1598. Remote Controlling Software Storage Area 83565c2 stores the software programs described in Fig. 1599.

[4175] Fig. 1598 illustrates the controllers stored in Automobile Controller Storage Area 83565c1 (Fig. 1597). As described in the present drawing, Automobile Controller Storage Area 83565c1 stores Engine Controller 83565c1a, Direction Controller 83565c1b, Speed Controller 83565c1c, Window Controller 83565c1d, Door Controller 83565c1e, Radio Controller 83565c1f, TV Controller 83565c1g, Radio Channel Selector 83565c1h, TV Channel Selector 83565c1i, Blinker Controller 83565c1j, Emergency Lamp Controller 83565c1k, Cruise Control Controller 83565c1l,

and Speaker Volume Controller 83565c1m. Engine Controller 83565c1a is the controller which controls the engine (not shown) of Automobile 835 (Fig. 1588). Direction Controller 83565c1b is the controller which controls the steering wheel (not shown) of Automobile 835. Speed Controller 83565c1c is the controller which controls the accelerator (not shown) of Automobile 835. Window Controller 83565c1d is the controller which controls the windows (not shown) of Automobile 835. Door Controller 83565c1e is the controller which controls the doors (not shown) of Automobile 835. Radio Controller 83565c1f is the controller which controls the radio (not shown) of Automobile 835. TV Controller 83565c1g is the controller which controls the TV (not shown) of Automobile 835. Radio Channel Selector 83565c1h is the controller which controls the radio channels (not shown) of the radio (not shown) installed in Automobile 835. TV Channel Selector 83565c1i is the controller which controls the radio channels (not shown) of the radio (not shown) installed in Automobile 835. Blinker Controller 83565c1j is the controller which controls the blinkers (not shown) of Automobile 835. Emergency Lamp Controller 83565c1k is the controller which controls the emergency lamp (not shown)

of Automobile 835. Cruise Control Controller 83565c1l is the controller which controls the cruise control (not shown) of Automobile 835. Speaker Volume Controller 83565c1m is the controller which controls the speaker (not shown) of Automobile 835. As another embodiment, the foregoing controllers may be in the form of hardware instead of software.

[4176] Fig. 1599 illustrates the software programs stored in Remote Controlling Software Storage Area 83565c2 (Fig. 1597). As described in the present drawing, Remote Controlling Software Storage Area 83565c2 stores Engine Controlling Software 83565c2a, Direction Controlling Software 83565c2b, Speed Controlling Software 83565c2c, Window Controlling Software 83565c2d, Door Controlling Software 83565c2e, Radio Controlling Software 83565c2f, TV Controlling Software 83565c2g, Radio Channel Selecting Software 83565c2h, TV Channel Selecting Software 83565c2i, Blinker Controlling Software 83565c2j, Emergency Lamp Controlling Software 83565c2k, Cruise Control Controlling Software 83565c2l, Speaker Volume Controlling Software 83565c2m, Controller Reinstalling Software 83565c2n, Data Reinstalling Software 83565c2o, and User Access Authenticating Soft-

ware 83565c2p. Engine Controlling Software 83565c2a is the software program described in Fig. 1613. Direction Controlling Software 83565c2b is the software program described in Fig. 1614. Speed Controlling Software 83565c2c is the software program described in Fig. 1615. Window Controlling Software 83565c2d is the software program described in Fig. 1616. Door Controlling Software 83565c2e is the software program described in Fig. 1617. Radio Controlling Software 83565c2f is the software program described in Fig. 1618. TV Controlling Software 83565c2g is the software program described in Fig. 1619. Radio Channel Selecting Software 83565c2h is the software program described in Fig. 1620. TV Channel Selecting Software 83565c2i is the software program described in Fig. 1621. Blinker Controlling Software 83565c2j is the software program described in Fig. 1622. Emergency Lamp Controlling Software 83565c2k is the software program described in Fig. 1623. Cruise Control Controlling Software 83565c2l is the software program described in Fig. 1624. Speaker Volume Controlling Software 83565c2m is the software program described in Fig. 1625. Controller Reinstalling Software 83565c2n is the software program described in Fig. 1626. Data Rein-

stalling Software 83565c2o is the software program described in Fig. 1627. User Access Authenticating Software 83565c2p is the software program described in Fig. 1612. The controllers stored in Automobile Controller Storage Area 83565c1 primarily functions as directly controlling Automobile 835 in the manner described in Fig. 1598, and the software programs stored in Remote Controlling Software Storage Area 83565c2 controls the controllers stored in Automobile Controller Storage Area 83565c1, by cooperating with the software programs stored in Remote Controlling Software Storage Area 20665c2 (Fig. 1611) of Communication Device 200, in a wireless fashion via Antenna 218 (Fig. 1).

[4177] Fig. 1600 illustrates the storage area included in RAM 206 (Fig. 1) of Communication Device 200. As described in the present drawing, RAM 206 includes Automobile Controlling Information Storage Area 20665a of which the data and the software programs stored therein are described in Fig. 1601.

[4178] The data and software programs stored in Automobile Controlling Information Storage Area 20665a (Fig. 1600) are downloaded from Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[4179] Fig. 1601 illustrates the storage areas included in Automobile Controlling Information Storage Area 20665a (Fig. 1600). As described in the present drawing, Automobile Controlling Information Storage Area 20665a includes Automobile Controlling Data Storage Area 20665b and Automobile Controlling Software Storage Area 20665c. Automobile Controlling Data Storage Area 20665b stores the data necessary to implement the present function on the side of Communication Device 200, such as the ones described in Figs. 1602 through 1608. Automobile Controlling Software Storage Area 20665c stores the software programs necessary to implement the present function on the side of Communication Device 200, such as the ones described in Fig. 1609.

[4180] Fig. 1602 illustrates the storage areas included in Automobile Controlling Data Storage Area 20665b (Fig. 1601). As described in the present drawing, Automobile Controlling Data Storage Area 20665b includes User Acess Data Storage Area 20665b1, Window Data Storage Area 20665b2, Door Data Storage Area 20665b3, Radio Channel Data Storage Area 20665b4, TV Channel Data Storage Area 20665b5, Blinker Data Storage Area 20665b6, and Work Area 20665b7. User Acess Data Storage Area

20665b1 stores the data described in Fig. 1603. Window Data Storage Area 20665b2 stores the data described in Fig. 1604. Door Data Storage Area 20665b3 stores the data described in Fig. 1605. Radio Channel Data Storage Area 20665b4 stores the data described in Fig. 1606. TV Channel Data Storage Area 20665b5 stores the data described in Fig. 1607. Blinker Data Storage Area 20665b6 stores the data described in Fig. 1608. Work Area 20665b7 is utilized as a work area to perform calculation and temporarily store data.

[4181] Fig. 1603 illustrates the data stored in User Acess Data Storage Area 20665b1 (Fig. 1602). As described in the present drawing, User Acess Data Storage Area 20665b1 comprises two columns, i.e., 'User ID' and 'Password Data'. Column 'User ID' stores the user ID which is an identification of the user of Communication Device 200. Column 'Password Data' stores the password data which represents the password set by the user of Communication Device 200. The password data is composed of alphanumeric data. In the example described in the present drawing, User Acess Data Storage Area 20665b1 stores the following data: the user ID 'User#1' and the corresponding password data 'Password Data#1'.

[4182] Fig. 1604 illustrates the data stored in Window Data Storage Area 20665b2 (Fig. 1602). As described in the present drawing, Window Data Storage Area 20665b2 comprises two columns, i.e., 'Window ID' and 'Window Data'. Column 'Window ID' stores the window IDs, and each window ID is an identification of the window (not shown) of Automobile 835 (Fig. 1588). Column 'Window Data' stores the window data, and each window data is the image data designed to be displayed on LCD 201 (Fig. 1) which represents the postion of the window (not shown) of the corresponding window ID. In the example described in the present drawing, Window Data Storage Area 20665b2 stores the following data: the window ID 'Window#1' and the corresponding window data 'Window Data#1'; the window ID 'Window#2' and the corresponding window data 'Window Data#2'; the window ID 'Window#3' and the corresponding window data 'Window Data#3'; and the window ID 'Window#4' and the corresponding window data 'Window Data#4'. Four windows of Automobile 835 which are represented by the window IDs, 'Window#1' through 'Window#4', are remotely controlable by implementing the present function.

[4183] Fig. 1605 illustrates the data stored in Door Data Storage

Area 20665b3 (Fig. 1602). As described in the present drawing, Door Data Storage Area 20665b3 comprises two columns, i.e., 'Door ID' and 'Door Data'. Column 'Door Data' stores the door data, and each door data is the image data designed to be displayed on LCD 201 (Fig. 1) which represents the postion of the door (not shown) of the corresponding door ID. In the example described in the present drawing, Door Data Storage Area 20665b3 stores the following data: the door ID 'Door#1' and the corresponding door data 'Door Data#1'; the door ID 'Door#2' and the corresponding door data 'Door Data#2'; the door ID 'Door#3' and the corresponding door data 'Door Data#3'; and the door ID 'Door#4' and the corresponding door data 'Door Data#4'. Four doors of Automobile 835 (Fig. 1588) which are represented by the door IDs, 'Door#1' through 'Door#4', are remotely controlable by implementing the present function.

[4184] Fig. 1606 illustrates the data stored in Radio Channel Data Storage Area 20665b4 (Fig. 1602). As described in the present drawing, Radio Channel Data Storage Area 20665b4 comprises two columns, i.e., 'Radio Channel ID' and 'Radio Channel Data'. Column 'Radio Channel ID' stores the radio channel IDs, and each radio channel ID is

an identification of the radio channel (not shown) playable by the radio (not shown) installed in Automobile 835 (Fig. 1588). Column 'Radio Channel Data' stores the radio channel data, and each radio channel data is the image data designed to be displayed on LCD 201 (Fig. 1) which represents the radio channel (not shown) of the corresponding radio channel ID. In the example described in the present drawing, Radio Channel Data Storage Area 20665b4 stores the following data: the radio channel ID 'Radio Channel#1' and the corresponding radio channel data 'Radio Channel Data#1'; the radio channel ID 'Radio Channel#2' and the corresponding radio channel data 'Radio Channel Data#2'; the radio channel ID 'Radio Channel#3' and the corresponding radio channel data 'Radio Channel Data#3'; and the radio channel ID 'Radio Channel#4' and the corresponding radio channel data 'Radio Channel Data#4'. Four radio channels which are represented by the radio channel IDs, 'Radio Channel#1' through 'Radio Channel#4', are remotely controlable by implementing the present invention.

[4185] Fig. 1607 illustrates the data stored in TV Channel Data Storage Area 20665b5 (Fig. 1602). As described in the present drawing, TV Channel Data Storage Area 20665b5

comprises two columns, i.e., 'TV Channel ID' and 'TV Channel Data'. Column 'TV Channel ID' stores the TV channel IDs, and each TV channel ID is an identification of the TV channel (not shown) playable by the TV (not shown) installed in Automobile 835 (Fig. 1588). Column 'TV Channel Data' stores the TV channel data, and each TV channel data is the image data designed to be displayed on LCD 201 (Fig. 1) which represents the TV channel (not shown) of the corresponding TV channel ID. In the example described in the present drawing, TV Channel Data Storage Area 20665b5 stores the following data: the TV channel ID 'TV Channel#1' and the corresponding TV channel data 'TV Channel Data#1'; the TV channel ID 'TV Channel#2' and the corresponding TV channel data 'TV Channel Data#2'; the TV channel ID 'TV Channel#3' and the corresponding TV channel data 'TV Channel Data#3'; and the TV channel ID 'TV Channel#4' and the corresponding TV channel data 'TV Channel Data#4'. Four TV channels which are represented by the TV channel IDs, 'TV Channel#1' through 'TV Channel#4', are remotely controlable by implementing the present invention.

[4186] Fig. 1608 illustrates the data stored in Blinker Data Storage Area 20665b6 (Fig. 1602). As described in the present

drawing, Blinker Data Storage Area 20665b6 comprises two columns, i.e., 'Blinker ID' and 'Blinker Data'. Column 'Blinker ID' stores the blinker IDs, and each blinker ID is an identification of the blinker (not shown) of Automobile 835 (Fig. 1588). Column 'Blinker Data' stores the blinker data, and each blinker data is the image data designed to be displayed on LCD 201 (Fig. 1) which represents the blinker (not shown) of the corresponding blinker ID. In the example described in the present drawing, Blinker Data Storage Area 20665b6 stores the following data: the blinker ID "Blinker#1' and the corresponding blinker data "Blinker Data#1'; and the blinker ID "Blinker#2' and the corresponding blinker data "Blinker Data#2'. Two blinkers which are represented by the blinker IDs, 'Blinker#1' and 'Blinker#2', are remotely controlable by implementing the present invention. Here, the blinker (not shown) represented by "Blinker#1' is the right blinker and the blinker (not shown) represented by "Blinker#2' is the left blinker.

[4187] Fig. 1609 illustrates the storage areas included in Automobile Controlling Software Storage Area 20665c (Fig. 1601). As described in the present drawing, Automobile Controlling Software Storage Area 20665c includes Automobile Controller Storage Area 20665c1 and Remote

Controlling Software Storage Area 20665c2. Automobile Controller Storage Area 20665c1 stores the controllers described in Fig. 1610. Remote Controlling Software Storage Area 20665c2 stores the software programs described in Fig. 1611.

[4188] Fig. 1610 illustrates the controllers stored in Automobile Controller Storage Area 20665c1 (Fig. 1609). As described in the present drawing, Automobile Controller Storage Area 20665c1 stores Engine Controller 20665c1a, Direction Controller 20665c1b, Speed Controller 20665c1c, Window Controller 20665c1d, Door Controller 20665c1e, Radio Controller 20665c1f, TV Controller 20665c1g, Radio Channel Selector 20665c1h, TV Channel Selector 20665c1i, Blinker Controller 20665c1j, Emergency Lamp Controller 20665c1k, Cruise Control Controller 20665c1l, and Speaker Volume Controller 20665c1m. Engine Controller 20665c1a is the controller which controls the engine (not shown) of Automobile 206. Direction Controller 20665c1b is the controller which controls the steering wheel (not shown) of Automobile 206. Speed Controller 20665c1c is the controller which controls the accelerator (not shown) of Automobile 206. Window Controller 20665c1d is the controller which controls the windows

(not shown) of Automobile 206. Door Controller 20665c1e is the controller which controls the doors (not shown) of Automobile 206. Radio Controller 20665c1f is the controller which controls the radio (not shown) of Automobile 206. TV Controller 20665c1g is the controller which controls the TV (not shown) of Automobile 206. Radio Channel Selector 20665c1h is the controller which controls the radio channels (not shown) of the radio (not shown) installed in Automobile 206. TV Channel Selector 20665c1i is the controller which controls the radio channels (not shown) of the radio (not shown) installed in Automobile 206. Blinker Controller 20665c1j is the controller which controls the blinkers (not shown) of Automobile 206. Emergency Lamp Controller 20665c1k is the controller which controls the emergency lamp (not shown) of Automobile 206. Cruise Control Controller 20665c1l is the controller which controls the cruise control (not shown) of Automobile 206. Speaker Volume Controller 20665c1m is the controller which controls the speaker (not shown) of Automobile 206. As another embodiment, the foregoing controllers may be in the form of hardware instead of software. The data stored in Automobile Controller Storage Area 20665c1 are primarily utilized for reinstallation,

i.e., to reinstall the data to Automobile 835 (Fig. 1588) as described hereinafter in case the data stored in Automobile 835 are corrupted or lost.

[4189] Fig. 1611 illustrates the software programs stored in Remote Controlling Software Storage Area 20665c2 (Fig. 1601). As described in the present drawing, Remote Controlling Software Storage Area 20665c2 stores Engine Controlling Software 20665c2a, Direction Controlling Software 20665c2b, Speed Controlling Software 20665c2c, Window Controlling Software 20665c2d, Door Controlling Software 20665c2e, Radio Controlling Software 20665c2f, TV Controlling Software 20665c2g, Radio Channel Selecting Software 20665c2h, TV Channel Selecting Software 20665c2i, Blinker Controlling Software 20665c2j, Emergency Lamp Controlling Software 20665c2k, Cruise Control Controlling Software 20665c2l, Speaker Volume Controlling Software 20665c2m, Controller Reinstalling Software 20665c2n, Data Reinstalling Software 20665c2o, and User Access Authenticating Software 20665c2p. Engine Controlling Software 20665c2a is the software program described in Fig. 1613. Direction Controlling Software 20665c2b is the software program described in Fig. 1614. Speed Controlling Software

20665c2c is the software program described in Fig. 1615. Window Controlling Software 20665c2d is the software program described in Fig. 1616. Door Controlling Software 20665c2e is the software program described in Fig. 1617. Radio Controlling Software 20665c2f is the software program described in Fig. 1618. TV Controlling Software 20665c2g is the software program described in Fig. 1619. Radio Channel Selecting Software 20665c2h is the software program described in Fig. 1620. TV Channel Selecting Software 20665c2i is the software program described in Fig. 1621. Blinker Controlling Software 20665c2j is the software program described in Fig. 1622. Emergency Lamp Controlling Software 20665c2k is the software program described in Fig. 1623. Cruise Control Controlling Software 20665c2l is the software program described in Fig. 1624. Speaker Volume Controlling Software 20665c2m is the software program described in Fig. 1625. Controller Reinstalling Software 20665c2n is the software program described in Fig. 1626. Data Reinstalling Software 20665c2o is the software program described in Fig. 1627. User Access Authenticating Software 20665c2p is the software program described in Fig. 1612. The controllers stored in Automobile Controller Storage

Area 83565c1 primarily functions as directly controlling Automobile 835 in the manner described in Fig. 1598, and the software programs stored in Remote Controlling Software Storage Area 83565c2 (Fig. 1611) controls the controllers stored in Automobile Controller Storage Area 83565c1 (Fig.1598), by cooperating with the software programs stored in Remote Controlling Software Storage Area 83565c2 (Fig. 1599) of Automobile 835, in a wireless fashion via Antenna 218 (Fig. 1).

[4190] Fig. 1612 illustrates User Access Authenticating Software 83565c2p (Fig. 1599) of Automobile 835 (Fig. 1588) and User Access Authenticating Software 20665c2p (Fig. 1611) of Communication Device 200, which determine whether Communication Device 200 in question is authorized to remotely control Automobile 835 by implementing the present function. As described in the present drawing, the user of Communication Device 200 inputs the user ID and the password data by utilizing Input Device 210 (Fig. 1) or via voice recognition system. The user ID and the password data are temporarily stored in User Acess Data Storage Area 20665b1 (Fig. 1603) from which the two data are sent to Automobile 835 (S1). Assume that the user input 'User#1' as the user ID and 'Password Data#1' as the

password data. Upon receiving the user ID and the password data (in the present example, User#1 and Password Data#1) from Communication Device 200, Automobile 835 stores the two data in Work Area 83565b7 (Fig. 1590) (S2). Automobile 835 then initiates the authentication process to determine whether Communication Device 200 in question is authorized to remotely control Automobile 835 by referring to the data stored in User Acess Data Storage Area 83565b1 (Fig. 1591) (S3). Assume that the authenticity of Communication Device 200 in question is cleared. Automobile 835 permits Communication Device 200 in question to remotely control Automobile 835 in the manner described hereinafter (S4).

[4191] Fig. 1613 illustrates Engine Controlling Software 83565c2a (Fig. 1599) of Automobile 835 (Fig. 1588) and Engine Controlling Software 20665c2a (Fig. 1611) of Communication Device 200, which ignite or turn off the engine (not shown) of Automobile 835. As described in the present drawing, the user of Communication Device 200 inputs an engine controlling signal by utilizing Input Device 210 (Fig. 1) or via voice recognition system. The signal is sent to Automobile 835 (S1). Here, the engine controlling signal indicates either to ignite the engine or

turn off the engine. Upon receiving the engine controlling signal from Communication Device 200, Automobile 835 stores the signal in Work Area 83565b7 (Fig. 1590) (S2). Automobile 835 controls the engine (not shown) via Engine Controller 83565c1a (Fig. 1598) in accordance with the engine controlling signal (S3).

[4192] Fig. 1614 illustrates Direction Controlling Software 83565c2b (Fig. 1599) of Automobile 835 (Fig. 1588) and Direction Controlling Software 20665c2b (Fig. 1611) of Communication Device 200, which control the direction of Automobile 835. As described in the present drawing, the user of Communication Device 200 inputs a direction controlling signal by utilizing Input Device 210 (Fig. 1) or via voice recognition system. The signal is sent to Automobile 835 (S1). Here, the direction controlling signal indicates either to move forward, back, left, or right Automobile 835. Upon receiving the direction controlling signal from Communication Device 200, Automobile 835 stores the signal in Work Area 83565b7 (Fig. 1590) (S2). Automobile 835 controls the direction via Direction Controller 83565c1b (Fig. 1598) in accordance with the direction controlling signal (S3).

[4193] Fig. 1615 illustrates Speed Controlling Software 83565c2c

(Fig. 1599) of Automobile 835 (Fig. 1588) and Speed Controlling Software 20665c2c (Fig. 1611) of Communication Device 200, which control the speed of Automobile 835. As described in the present drawing, the user of Communication Device 200 inputs a speed controlling signal by utilizing Input Device 210 (Fig. 1) or via voice recognition system. The signal is sent to Automobile 835 (S1). Here, the speed controlling signal indicates either to increase speed or decrease speed of Automobile 835. Upon receiving the speed controlling signal from Communication Device 200, Automobile 835 stores the signal in Work Area 83565b7 (Fig. 1590) (S2). Automobile 835 controls the speed via Speed Controller 83565c1c (Fig. 1598) In accordance the with speed controlling signal (S3).

[4194] Fig. 1616 illustrates Window Controlling Software 83565c2d (Fig. 1599) of Automobile 835 (Fig. 1588) and Window Controlling Software 20665c2d (Fig. 1611) of Communication Device 200, which control the window (not shown) of Automobile 835. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves all window data from Window Data Storage Area 20665b2 (Fig. 1604) and displays the data on LCD 201 (Fig. 1) (S1). The user of Communication De-

vice 200 selects one of the window data (for example, Window Data#1), and CPU 211 identifies the corresponding window ID (for example, Window#1) by referring to Window Data Storage Area 20665b2 (Fig. 1604) (S2). The user further inputs a window controlling signal by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S3). Here, the window controlling signal indicates either to open the window or to close the window. CPU 211 sends the window ID and the window controlling signal to Automobile 835 (S4). Upon receiving the window ID and the window controlling signal from Communication Device 200, Automobile 835 stores both data in Work Area 83565b7 (Fig. 1590) (S5). Automobile 835 controls the window identified by the window ID via Window Controller 83565c1d (Fig. 1598) in accordance with the window controlling signal (S6).

[4195] Fig. 1617 illustrates Door Controlling Software 83565c2e (Fig. 1599) of Automobile 835 (Fig. 1588) and Door Controlling Software 20665c2e (Fig. 1611) of Communication Device 200, which control the door (not shown) of Automobile 835. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves all door data from Door Data Storage Area 20665b3 (Fig. 1605)

and displays the data on LCD 201 (Fig. 1) (S1). The user of Communication Device 200 selects one of the door data (for example, Door Data#1), and CPU 211 identifies the corresponding door ID (for example, Door#1) by referring to Door Data Storage Area 20665b3 (Fig. 1605) (S2). The user further inputs a door controlling signal by utilizing Input Device 210 (Fig. 1) or via voice recognition system. Here, the door controlling signal indicates either to open the door or to close the door (S3). CPU 211 sends the door ID and the door controlling signal to Automobile 835 (S4). Upon receiving the door ID and the door controlling signal from Communication Device 200, Automobile 835 stores both data in Work Area 83565b7 (Fig. 1590) (S5). Automobile 835 controls the door identified by the door ID via Door Controller 83565c1e (Fig. 1598) in accordance with the door controlling signal (S6).

[4196] Fig. 1618 illustrates Radio Controlling Software 83565c2f (Fig. 1599) of Automobile 835 (Fig. 1588) and Radio Controlling Software 20665c2f (Fig. 1611) of Communication Device 200, which turn on or turn off the radio (not shown) installed in Automobile 835. As described in the present drawing, the user of Communication Device 200 inputs a radio controlling signal, and CPU 211 sends the

signal to Automobile 835 (S1). Here, the radio controlling signal indicates either to turn on the radio or to turn off the radio. Upon receiving the radio controlling signal from Communication Device 200, Automobile 835 stores the signal in Work Area 83565b7 (Fig. 1590) (S2). Automobile 835 controls the radio via Radio Controller 83565c1f (Fig. 1598) in accordance with the radio controlling signal (S3).

[4197] Fig. 1619 illustrates TV Controlling Software 83565c2g (Fig. 1599) of Automobile 835 (Fig. 1588) and TV Controlling Software 20665c2g (Fig. 1611) of Communication Device 200, which turn on or turn off the TV (not shown) installed in Automobile 835. As described in the present drawing, the user of Communication Device 200 inputs a TV controlling signal, and CPU 211 (Fig. 1) sends the signal to Automobile 835 (S1). Here, the TV controlling signal indicates either to turn on the TV or to turn off the TV. Upon receiving the TV controlling signal from Communication Device 200, Automobile 835 stores the signal in Work Area 83565b7 (Fig. 1590) (S2). Automobile 835 controls the TV via TV Controller 83565c1g (Fig. 1598) in accordance with the TV controlling signal (S3).

[4198] Fig. 1620 illustrates Radio Channel Selecting Software 83565c2h (Fig. 1599) of Automobile 835 (Fig. 1588) and

Radio Channel Selecting Software 20665c2h (Fig. 1611) of Communication Device 200, which select the channel of the radio (not shown) installed in Automobile 835. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves all radio channel data from Radio Channel Data Storage Area 20665b4 (Fig. 1606) and Displays the data on LCD 201 (Fig. 1) (S1). The user of Communication Device 200 selects one of the radio channel data (for example, Radio Channel Data#1), and CPU 211 identifies the corresponding radio channel ID (for example, Radio Channel#1) by referring to Radio Channel Data Storage Area 20665b4 (Fig. 1606) (S2). CPU 211 sends the radio channel ID and the radio channel controlling signal to Automobile 835 (S3). Here, the radio channel controlling signal indicates to change the radio channel to the one identified by the radio channel ID. Upon receiving the radio channel ID and the radio channel controlling signal from Communication Device 200, Automobile 835 stores both data in Work Area 83565b7 (Fig. 1590) (S4). Automobile 835 controls the radio channel of the radio via Radio Channel Selector 83565c1h (Fig. 1598) in accordance with the Radio Channel Controlling Signal (S5).

[4199] Fig. 1621 illustrates TV Channel Selecting Software 83565c2i (Fig. 1599) of Automobile 835 (Fig. 1588) and TV Channel Selecting Software 20665c2i (Fig. 1611) of Communication Device 200, which select the channel of the TV (not shown) installed in Automobile 835. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves all TV channel data from TV Channel Data Storage Area 20665b5 (Fig. 1607) and displays the data on LCD 201 (Fig. 1) (S1). The user of Communication Device 200 selects one of the TV channel data, and CPU 211 identifies the corresponding TV channel ID (for example, TV Channel#1) by referring to TV Channel Data Storage Area 20665b5 (Fig. 1607) (S2). CPU 211 sends the TV channel ID and the TV channel controlling signal to Automobile 835 (S3). Here, the TV channel controlling signal indicates to change the TV channel to the one identified by the TV channel ID. Upon receiving the TV channel ID and the TV channel controlling signal from Communication Device 200, Automobile 835 stores both data in Work Area 83565b7 (Fig. 1590) (S4). Automobile 835 controls the TV Channel via TV Channel Selector 83565c1i (Fig. 1598) in accordance with the TV channel controlling signal (S5).

[4200] Fig. 1622 illustrates Blinker Controlling Software 83565c2j (Fig. 1599) of Automobile 835 (Fig. 1588) and Blinker Controlling Software 20665c2j (Fig. 1611) of Communication Device 200, which turn on or turn off the blinker (not shown) of Automobile 835. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves all blinker data from Blinker Data Storage Area 20665b6 (Fig. 1608) and displays the data on LCD 201 (Fig. 1) (S1). The user of Communication Device 200 selects one of the blinker data, and CPU 211 identifies the corresponding blinker ID (for example Blinker#1) by referring to Blinker Data Storage Area 20665b6 (Fig. 1608) (S2). CPU 211 sends the blinker ID and the blinker controlling signal to Automobile 835 (S3). Here, the blinker controlling signal indicates either to turn on or turn off the blinker identifed by the blinker ID. Upon receiving the blinker ID and the blinker controlling signal from Communication Device 200, Automobile 835 stores both data in Work Area 83565b7 (Fig. 1590) (S4). Automobile 835 controls the blinker via Blinker Controller 20665c1j in accordance with the blinker controlling signal (S5).

[4201] Fig. 1623 illustrates Emergency Lamp Controlling Software 83565c2k (Fig. 1599) of Automobile 835 (Fig. 1588) and

Emergency Lamp Controlling Software 20665c2k (Fig. 1611) of Communication Device 200, which turn on or turn off the emergency lamp (not shown) installed in Automobile 835. As described in the present drawing, the user of Communication Device 200 inputs an emergency lamp controlling signal, and CPU 211 (Fig. 1) sends the signal to Automobile 835 (S1). Here, the emergency lamp controlling signal indicates either to turn on the emergency lamp or to turn off the emergency lamp. Upon receiving the emergency lamp controlling signal from Communication Device 200, Automobile 835 stores the signal in Work Area 83565b7 (Fig. 1590) (S2). Automobile 835 controls the emergency lamp via Emergency Lamp Controller 83565c1k (Fig. 1598) in accordance with the emergency lamp controlling signal (S3).

[4202] Fig. 1624 illustrates Cruise Control Controlling Software 83565c2l (Fig. 1599) of Automobile 835 (Fig. 1588) and Cruise Control Controlling Software 20665c2l (Fig. 1611) of Communication Device 200, which turn on or turn off the cruise control (not shown) of Automobile 835. As described in the present drawing, the user of Communication Device 200 inputs a cruise control controlling signal, and CPU 211 (Fig. 1) sends the signal to Automobile 835

(S1). Here, the cruise control controlling signal indicates either to turn on the cruise control or turn off the cruise control. Upon receiving the cruise control controlling signal from Communication Device 200, Automobile 835 stores the signal in Work Area 83565b7 (Fig. 1590) (S2). Automobile 835 controls the cruise control via Cruise Control Controller 83565c1l (Fig. 1598) in accordance with the cruise control controlling signal (S3).

[4203] Fig. 1625 illustrates Speaker Volume Controlling Software 83565c2m (Fig. 1599) of Automobile 835 (Fig. 1588) and Speaker Volume Controlling Software 20665c2m (Fig. 1611) of Communication Device 200, which raise or lower the volume of the speaker (not shown) of Automobile 835. As described in the present drawing, the user of Communication Device 200 inputs a speaker volume controlling signal, and CPU 211 (Fig. 1) sends the signal to Automobile 835 (S1). Here, the speaker volume controlling signal indicates either to raise the volume or lower the volume of the speaker. Upon receiving the speaker volume controlling signal from Communication Device 200, Automobile 835 stores the signal in Work Area 83565b7 (Fig. 1590) (S2). Automobile 835 controls the speaker volume of the speaker via Speaker Volume Controller 83565c1m (Fig.

1598) in accordance with the speaker volume controlling signal (S3).

[4204] Fig. 1626 illustrates Controller Reinstalling Software 83565c2n (Fig. 1599) of Automobile 835 (Fig. 1588) and Controller Reinstalling Software 20665c2n (Fig. 1611) of Communication Device 200, which reinstalls the controllers to Automobile Controller Storage Area 83565c1. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves all controllers from Automobile Controller Storage Area 20665c1, and sends the controllers to Automobile 835 (S1). Upon receiving the controllers from Communication Device 200, Automobile 835 stores the controllers in Work Area 83565b7 (Fig. 1590) (S2). Automobile 835 then reinstalls the controllers in Automobile Controller Storage Area 83565c1 (S3).

[4205] Fig. 1627 illustrates Data Reinstalling Software 83565c2o (Fig. 1599) of Automobile 835 (Fig. 1588) and Data Reinstalling Software 20665c2o (Fig. 1611) of Communication Device 200, which reinstall the data to Automobile Controlling Data Storage Area 20665b. As described in the present drawing, Automobile 835 retrieves all data from Automobile Controlling Data Storage Area 83565b, and sends the data to Communication Device 200 (S1). Upon

receiving the data from Automobile 835, CPU 211 (Fig. 1) of Communication Device 200 stores the data in Work Area 20665b7 (S2). CPU 211 then reinstalls the data in Automobile Controlling Data Storage Area 20665b (S3).

[4206] For the avoidance of doubt, Automobile 835 (Fig. 1588) is not limited to an automobile or a car; the present function may be implemented with any type of carrier or vehicle, such as airplane, space ship, artificial satellite, space station, train, and motor cycle.

[4207] *<<Automobile Controlling Function -- Summary>>*

[4208] (1) A communication device comprising a microphone, a speaker, a display, an input device, and a multiple mode implementer, wherein said multiple mode implementer implements a voice communication mode and an automobile controlling mode, a series of audio data are input to and output from said microphone and said speaker respectively thereyby enabling the user of said communication device to voice communicate with another person when said voice communication mode is implemented, said communication device remotely controls, in response to an automobile controlling signal input to said input device, an automobile when said automobile controlling mode is implemented.

[4209] (2) An automobile controlling system comprising a communication device and an automobile, wherein said communication device comprises a microphone, a speaker, a display, an input device, and a multiple mode implementer, said multiple mode implementer implements a voice communication mode and an automobile controlling mode, a series of audio data are input to and output from said microphone and said speaker respectively thereyby enabling the user of said communication device to voice communicate with another person when said voice communication mode is implemented, said communication device remotely controls, in response to an automobile controlling signal input to said input device, said automobile in when said automobile controlling mode is implemented.

[4210] (3) An automobile controlling software program which remotely controls an automobile by a communication device, wherein said communication device comprise a microphone, a speaker, a display, an input device, said communication device remotely controls, in response to an automobile controlling signal input to said input device, said automobile under the control of said automobile controlling software program.

[4211] *<<OCR Function>>*

[4212] Fig. 1628 illustrates the storage area included in RAM 206 (Fig. 1). As described in the present drawing, RAM 206 includes OCR Information Storage Area 20666a of which the data and the software programs stored therein are described in Fig. 1629.

[4213] The data and software programs stored in OCR Information Storage Area 20666a (Fig. 1628) are downloaded from Host H (Fig. 429) in the manner described in Figs. 401 through 407.

[4214] Fig. 1629 illustrates the storage areas included in OCR Information Storage Area 20666a (Fig. 1628). As described in the present drawing, OCR Information Storage Area 20666a includes OCR Data Storage Area 20666b and OCR Software Storage Area 20666c. OCR Data Storage Area 20666b stores the data necessary to implement the present function, such as the ones described in Figs. 1630 through 1635. OCR Software Storage Area 20666c stores the software programs necessary to implement the present function, such as the ones described in Figs. 1636a and 1636b.

[4215] Fig. 1630 illustrates the storage areas included in OCR Data Storage Area 20666b (Fig. 1629). As described in the

present drawing, OCR Data Storage Area 20666b includes Web Address Data Storage Area 20666b1, Email Address Data Storage Area 20666b2, Phone Data Storage Area 20666b3, Alphanumeric Data Storage Area 20666b4, Image Data Storage Area 20666b5, and Work Area 20666b6. Web Address Data Storage Area 20666b1 stores the data described in Fig. 1631. Email Address Data Storage Area 20666b2 stores the data described in Fig. 1632. Phone Data Storage Area 20666b3 stores the data described in Fig. 1633. Alphanumeric Data Storage Area 20666b4 stores the data described in Fig. 1634. Image Data Storage Area 20666b5 stores the data described in Fig. 1635. Work Area 20666b6 is utilized as a work area to perform calculation and temporarily store data.

[4216] Fig. 1631 illustrates the data stored in Web Address Data Storage Area 20666b1 (Fig. 1630). As described in the present drawing, Web Address Data Storage Area 20666b1 comprises two columns, i.e., 'Web Address ID' and 'Web Address Data'. Column 'Web Address ID' stores the web address IDs, and each web address ID is the title of the corresponding web address data stored in column 'Web Address Data' utilized for identification purposes. Column 'Web Address Data' stores the web address data,

and each web address data represents a web address composed of alphanumeric data of which the first portion thereof is 'http://'. In the example described in the present drawing, Web Address Data Storage Area 20666b1 stores the following data: the web address ID 'Web Address#1' and the corresponding web address data 'Web Address Data#1'; the web address ID 'Web Address#2' and the corresponding web address data 'Web Address Data#2'; the web address ID 'Web Address#3' and the corresponding web address data 'Web Address Data#3'; and the web address ID 'Web Address#4' and the corresponding web address data 'Web Address Data#4'.

[4217] Fig. 1632 illustrates the data stored in Email Address Data Storage Area 20666b2 (Fig. 1630). As described in the present drawing, Email Address Data Storage Area 20666b2 comprises two columns, i.e., 'Email Address ID' and 'Email Address Data'. Column 'Email Address ID' stores the email address IDs, and each email address ID is the title of the corresponding email address data stored in column 'Email Address Data' utilized for identification purposes. Column 'Email Address Data' stores the email address data, and each email address data represents an email address composed of alphanumeric data which in-

cludes '@' mark therein. In the example described in the present drawing, Email Address Data Storage Area 20666b2 stores the following data: the email address ID 'Email Address#1' and the corresponding email address data 'Email Address Data#1'; the email address ID 'Email Address#2' and the corresponding email address data 'Email Address Data#2'; the email address ID 'Email Address#3' and the corresponding email address data 'Email Address Data#3'; and the email address ID 'Email Address#4' and the corresponding email address data 'Email Address Data#4'.

[4218] Fig. 1633 illustrates the data stored in Phone Data Storage Area 20666b3 (Fig. 1630). As described in the present drawing, Phone Data Storage Area 20666b3 comprises two columns, i.e., 'Phone ID' and 'Phone Data'. Column 'Phone ID' stores the phone IDs, and each phone ID is the title of the corresponding phone data stored in column 'Phone Data' utilized for identification purposes. Column 'Phone Data' stores the phone data, and each phone data represents a phone number composed of numeric figure of which the format is 'xxx-xxx-xxxx'. In the example described in the present drawing, Phone Data Storage Area 20666b3 stores the following data: the phone ID

'Phone#1' and the corresponding phone data 'Phone Data#1'; the phone ID 'Phone#2' and the corresponding phone data 'Phone Data#2'; the phone ID 'Phone#3' and the corresponding phone data 'Phone Data#3'; and the phone ID 'Phone#4' and the corresponding phone data 'Phone Data#4'.

[4219] Fig. 1634 illustrates the data stored in Alphanumeric Data Storage Area 20666b4 (Fig. 1630). As described in the present drawing, Alphanumeric Data Storage Area 20666b4 comprises two columns, i.e., 'Alphanumeric ID' and 'Alphanumeric Data'. Column 'Alphanumeric ID' stores alphanumeric IDs, and each alphanumeric ID is the title of the corresponding alphanumeric data stored in column 'Alphanumeric Data' utilized for identification purposes. Column 'Alphanumeric Data' stores the alphanumeric data, and each alphanumeric data represents alphanumeric figure primarily composed of numbers, texts, words, and letters. In the example described in the present drawing, Alphanumeric Data Storage Area 20666b4 stores the following data: the alphanumeric ID 'Alphanumeric#1' and the corresponding alphanumeric data 'Alphanumeric Data#1'; the alphanumeric ID 'Alphanumeric#2' and the corresponding alphanumeric data

'Alphanumeric Data#2'; the alphanumeric ID 'Alphanumeric#3' and the corresponding alphanumeric data 'Alphanumeric Data#3'; and the alphanumeric ID 'Alphanumeric#4' and the corresponding alphanumeric data 'Alphanumeric Data#4'.

[4220] Fig. 1635 illustrates the data stored in Image Data Storage Area 20666b5 (Fig. 1630). As described in the present drawing, Image Data Storage Area 20666b5 comprises two columns, i.e., 'Image ID' and 'Image Data'. Column 'Image ID' stores the image IDs, and each image ID is the title of the corresponding image data stored in column 'Image Data' utilized for identification purposes. Column 'Image Data' stores the image data, and each image data is a data composed of image such as the image input via CCD Unit 214 (Fig. 1). In the example described in the present drawing, Image Data Storage Area 20666b5 stores the following data: the Image ID 'Image#1' and the corresponding Image Data 'Image Data#1'; the Image ID 'Image#2' and the corresponding Image Data 'Image Data#2'; the Image ID 'Image#3' and the corresponding Image Data 'Image Data#3'; and the Image ID 'Image#4' and the corresponding Image Data 'Image Data#4'.

[4221] Fig. 1636a and 1636b illustrate the software programs

stored in OCR Software Storage Area 20666c (Fig. 1629). As described in the present drawing, OCR Software Storage Area 20666c stores Image Data Scanning Software 20666c1, Image Data Storing Software 20666c2, OCR Software 20666c3, Alphanumeric Data Storing Software 20666c4, Web Address Data Identifying Software 20666c5a, Web Address Data Correcting Software 20666c5b, Web Address Data Storing Software 20666c5c, Address Accessing Software 20666c5d, Email Address Data Identifying Software 20666c6a, Email Address Data Correcting Software 20666c6b, Email Address Data Storing Software 20666c6c, Email Editting Software 20666c6d, Phone Data Identifying Software 20666c7a, Phone Data Correcting Software 20666c7b, Phone Data Storing Software 20666c7c, and Dialing Software 20666c7d. Image Data Scanning Software 20666c1 is the software program described in Fig. 1637. Image Data Storing Software 20666c2 is the software program described in Fig. 1638. OCR Software 20666c3 is the software program described in Fig. 1639. Alphanumeric Data Storing Software 20666c4 is the software program described in Fig. 1640. Web Address Data Identifying Software 20666c5a is the software program described in Fig. 1641. Web Address

Data Correcting Software 20666c5b is the software program described in Fig. 1642. Web Address Data Storing Software 20666c5c is the software program described in Fig. 1643. Web Address Accessing Software 20666c5d is the software program described in Fig. 1644. Email Address Data Identifying Software 20666c6a is the software program described in Fig. 1645. Email Address Data Correcting Software 20666c6b is the software program described in Fig. 1646. Email Address Data Storing Software 20666c6c is the software program described in Fig. 1647. Email Editting Software 20666c6d is the software program described in Fig. 1648. Phone Data Identifying Software 20666c7a is the software program described in Fig. 1649. Phone Data Correcting Software 20666c7b is the software program described in Fig. 1650. Phone Data Storing Software 20666c7c is the software program described in Fig. 1651. Dialing Software 20666c7d is the software program described in Fig. 1652.

[4222] Fig. 1637 illustrates Image Data Scanning Software 20666c1 (Fig. 1636a) of Communication Device 200, which scans an image by utilizing CCD Unit (Fig. 1). Referring to the present drawing, CPU 211 (Fig. 1) scans an image by utilizing CCD Unit (Fig. 1) (S1), and stores the ex-

tracted image data in Work Area 20666b6 (Fig. 1630) (S2). CPU 211 then retrieves the image data from Work Area 20666b6 (Fig. 1630) and displays the data on LCD 201 (Fig. 1) (S3).

[4223] Fig. 1638 illustrates Image Data Storing Software 20666c2 (Fig. 1636a) of Communication Device 200, which stores the image data scanned by CCD Unit (Fig. 1). Referring to the present drawing, CPU 211 (Fig. 1) retrieves the image data from Work Area 20666b6 (Fig. 1630) and displays the data On LCD 201 (Fig. 1) (S1). The user of Communication Device 200 inputs an image ID, i.e., a title of the image data by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2). CPU 211 then stores the image ID and the image data in Image Data Storage Area 20666b5 (Fig. 1635) (S3).

[4224] Fig. 1639 illustrates OCR Software 20666c3 (Fig. 1636a) of Communication Device 200, which extracts alphanumeric data from image data by utilizing the method so-called 'optical character recognition' or 'OCR'. Referring to the present drawing, CPU 211 (Fig. 1) retrieves the image IDs from Image Data Storage Area 20666b5 (Fig. 1635) and displays the data on LCD 201 (Fig. 1) (S1). The user of Communication Device 200 selects one of the image IDs

by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2). CPU 211 then retieves the image data of the image ID selected in S2 from Image Data Storage Area 20666b5 (Fig. 1635) and displays the image data on LCD 201 (Fig. 1) (S3). CPU 211 executes the OCR process, i.e., extracts alphanumeric data from the image data (S4), and stores the extracted alphanumeric data in Work Area 20666b6 (Fig. 1630) (S5).

[4225] Fig. 1640 illustrates Alphanumeric Data Storing Software 20666c4 (Fig. 1636a) of Communication Device 200, which stores the extracted alphanumeric data in Alphanumeric Data Storage Area 20666b4 (Fig. 1634). Referring to the present drawing, the user of Communication Device 200 inputs an alphanumeric ID (i.e., the title of the alphanumeric data) (S1). CPU 211 (Fig. 1) then retrieves the alphanumeric data from Work Area 20666b6 (Fig. 1630) (S2), and stores the data in Alphanumeric Data Storage Area 20666b4 (Fig. 1634) with the Alphanumeric ID (S3).

[4226] Fig. 1641 illustrates Web Address Data Identifying Software 20666c5a (Fig. 1636a) of Communication Device 200, which identifies the web address data among the Alphanumeric Data. Referring to the present drawing, CPU 211 (Fig. 1) retrieves the alphanumeric IDs from Alphanu-

meric Data Storage Area 20666b4 (Fig. 1634) and displays the alphanumeric IDs on LCD 201 (Fig. 1) (S1). The user of Communication Device 200 selects one of the Alphanumeric IDs by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2). CPU 211 retrieves the corresponding alphanumeric data from Alphanumeric Data Storage Area 20666b4 (Fig. 1634) and displays the data on LCD 201 (Fig. 1) (S3). CPU 211 stores the alphanumeric data retrieved in S3 in Work Area 20666b6 (Fig. 1630) for the web address data identification explained in the next step (S4). CPU 211 scans the alphanumeric data, i.e., applies the web address criteria (for example, 'http://', 'www.', '.com', '.org', '.edu') to each alphanumeric data, and identifies the web address data included therein (S5). CPU 211 emphasizes the identified web address data by changing the font color (for example, blue) and drawing underlines to the identified web address data (S6). CPU 211 displays the alphanumeric data with the identified web address data emphasized on LCD 201 (Fig. 1) thereafter (S7).

[4227] Fig. 1642 illustrates Web Address Data Correcting Software 20666c5b (Fig. 1636a) of Communication Device 200, which corrects the misidentified web address data by

manually selecting the start point and the end point of the web address data. For example, if the web address data is misidentified as 'www.yahoo' and leaves out the remaining '.com', the user of Communication Device 200 may manually correct the web address data by selecting the start point and the end point of 'www.yaoo.com'. Referring to the present drawing, CPU 211 (Fig. 1) displays the alphanumeric data with web address data emphasized (S1). The user of Communication Device 200 selects the start point of the web address data (S2) and the end point of the web address data by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S3). CPU 211 then identifies the alphanumeric data located between the start point and the end point as web address data (S4), and emphasizes the web address data by changing the font color (for example, blue) and drawing underlines thereto (S5). The alphanumeric data with the web address data emphasized are displayed on LCD 201 (Fig. 1) thereafter (S6).

[4228] Fig. 1643 illustrates Web Address Data Storing Software 20666c5c (Fig. 1636a) of Communication Device 200, which stores the web address data in Web Address Data Storage Area 20666b1 (Fig. 1631). Referring to the present drawing, CPU 211 (Fig. 1) displays the alphanu-

meric data with web address data emphasized (S1). The user of Communication Device 200 selects one of the web address data by utilizing Input Device 210 (Fig. 1) or via voice recognition system, and CPU 211 emphasizes the data (for example, change to bold font) (S2). The user then inputs the web address ID (the title of the web address data) (S3). CPU 211 stores the web address ID and the web address data in Web Address Data Storage Area 20666b1 (Fig. 1631) (S4).

[4229] Fig. 1644 illustrates Web Address Accessing Software 20666c5d (Fig. 1636a) of Communication Device 200, which accesses the web site represented by the web address data. Referring to the present drawing, CPU 211 (Fig. 1) displays the alphanumeric data with web address data emphasized (S1). The user of Communication Device 200 selects one of the web address data by utilizing Input Device 210 (Fig. 1) or via voice recognition system (for example, click one of the web address data) (S2). CPU 211 then opens an internet browser (for example, the Internet Explorer) and enters the web address data selected in S2 therein (S3). CPU 211 accesses the web site thereafter (S4).

[4230] Fig. 1645 illustrates Email Address Data Identifying Soft-

ware 20666c6a (Fig. 1636b) of Communication Device 200, which identifies the email address data among the alphanumeric data. Referring to the present drawing, CPU 211 (Fig. 1) retrieves the alphanumeric IDs from Alphanumeric Data Storage Area 20666b4 (Fig. 1634) and displays the alphanumeric IDs on LCD 201 (Fig. 1) (S1). The user of Communication Device 200 selects one of the alphanumeric IDs by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2). CPU 211 retrieves the corresponding alphanumeric data from Alphanumeric Data Storage Area 20666b4 (Fig. 1634) and displays the data on LCD 201 (Fig. 1) (S3). CPU 211 stores the alphanumeric data retrieved in S3 in Work Area 20666b6 (Fig. 1630) for the email address data identification explained in the next step (S4). CPU 211 scans the alphanumeric data, i.e., applies the email address criteria (for example, '@') to each alphanumeric data, and identifies the email address data included therein (S5). CPU 211 emphasizes the identified email address data by changing the font color (for example, green) and drawing underlines to the identified email address data (S6). CPU 211 displays the alphanumeric data with the identified email address data emphasized on LCD 201 (Fig. 1) thereafter (S7).

[4231] Fig. 1646 illustrates Email Address Data Correcting Software 20666c6b (Fig. 1636b) of Communication Device 200, which corrects the misidentified email address data by manually selecting the start point and the end point of the email address data. For example, if the email address data is misidentified as 'iwaofujisaki@yahoo' and leaves out the remaining '.com', the user of Communication Device 200 may manually correct the email address data by selecting the start point and the end point of 'iwaofujisaki@yaoo.com'. Referring to the present drawing, CPU 211 (Fig. 1) displays the alphanumeric data with email address data emphasized (S1). The user of Communication Device 200 selects the start point of the email address data (S2) and the end point of the email address data by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S3). CPU 211 then identifies the alphanumeric data located between the start point and the end point as email address data (S4), and emphasizes the email address data by changing the font color (for example, green) and drawing underlines thereto (S5). The alphanumeric data with the email address data emphasized are displayed on LCD 201 (Fig. 1) thereafter (S6).

[4232] Fig. 1647 illustrates Email Address Data Storing Software

20666c6c (Fig. 1636b) of Communication Device 200, which stores the email address data to Email Address Data Storage Area 20666b2 (Fig. 1632). Referring to the present drawing, CPU 211 (Fig. 1) displays the alphanumeric data with the email address data emphasized (S1). The user of Communication Device 200 selects one of the email address data, and CPU 211 emphasizes the data (for example, change to bold font) (S2). The user then inputs the email address ID (the title of the email address data) by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S3). CPU 211 stores the email address ID and the email address data in Email Address Data Storage Area 20666b2 (Fig. 1632) (S4).

[4233] Fig. 1648 illustrates Email Editting Software 20666c6d (Fig. 1636b) of Communication Device 200, which opens an email editor (for example, the Outlook Express) wherein the email address data is set as the receiver's address. Referring to the present drawing, CPU 211 (Fig. 1) displays the alphanumeric data with the email address data emphasized (S1). The user of Communication Device 200 selects one of the email address data (for example, click one of the email address data) by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S2). CPU

211 then opens an email editor (for example, the Outlook Express) (S3), and sets the email address data selected in S2 as the receiver's address (S4).

[4234] Fig. 1649 illustrates Phone Data Identifying Software 20666c7a (Fig. 1636b) of Communication Device 200, which identifies the phone data among the alphanumeric data. Referring to the present drawing, CPU 211 (Fig. 1) retrieves the alphanumeric IDs from Alphanumeric Data Storage Area 20666b4 (Fig. 1634) and displays the alphanumeric IDs on LCD 201 (Fig. 1) (S1). The user of Communication Device 200 selects one of the alphanumeric IDs (S2). CPU 211 retrieves the corresponding alphanumeric data from Alphanumeric Data Storage Area 20666b4 (Fig. 1634) and displays the data on LCD 201 (Fig. 1) (S3). CPU 211 stores the alphanumeric data retrieved in S3 in Work Area 20666b6 (Fig. 1630) for the phone data identification explained in the next step (S4). CPU 211 scans the alphanumeric data, i.e., applies the phone criteria (for example, numeric data with 'xxx-xxx-xxxx' format) to each alphanumeric data, and identifies the phone data included therein (S5). CPU 211 emphasizes the identified phone data by changing the font color (for example, yellow) and drawing underlines to the

identified phone data (S6). CPU 211 displays the alphanumeric data with the identified phone data emphasized on LCD 201 (Fig. 1) thereafter (S7).

[4235] Fig. 1650 illustrates Phone Data Correcting Software 20666c7b (Fig. 1636b) of Communication Device 200, which corrects the misidentified phone data by manually selecting the start point and the end point of the phone data. For example, if the phone data is misidentified as '916-455-' and leaves out the remaining '1293', the user of Communication Device 200 may manually correct the phone data by selecting the start point and the end point of '916-455-1293'. Referring to the present drawing, CPU 211 (Fig. 1) displays the alphanumeric data with phone data emphasized (S1). The user of Communication Device 200 selects the start point of the phone data (S2) and the end point of the phone data by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S3). CPU 211 then identifies the alphanumeric data located between the start point and the end point as phone data (S4), and emphasizes the phone data by changing the font color (for example, yellow) and drawing underlines thereto (S5). The alphanumeric data with the phone data emphasized are displayed on LCD 201 (Fig. 1) thereafter (S6).

[4236] Fig. 1651 illustrates Phone Data Storing Software 20666c7c (Fig. 1636b) of Communication Device 200, which stores the phone data to Phone Data Storage Area 20666b3 (Fig. 1633). Referring to the present drawing, CPU 211 (Fig. 1) displays the alphanumeric data with the phone data emphasized (S1). The user of Communication Device 200 selects one of the phone data, and CPU 211 emphasizes the data (for example, change to bold font) (S2). The user then inputs the phone ID (the title of the phone data) (S3). CPU 211 stores the phone ID and the phone data in Phone Data Storage Area 20666b3 (Fig. 1633) (S4).

[4237] Fig. 1652 illustrates Dialing Software 20666c7d (Fig. 1636b) of Communication Device 200, which opens a phone dialer and initiates a dialing process by utilizing the phone data. Referring to the present drawing, CPU 211 (Fig. 1) displays the alphanumeric data with the phone data emphasized (S1). The user of Communication Device 200 selects one of the phone data by utilizing Input Device 210 (Fig. 1) or via voice recognition system (for example, click one of the phone data) (S2). CPU 211 then opens a phone dialer (S3), and inputs the phone data selected in S2 (S4). A dialing process is initiated thereafter.

[4238] *<<OCR Function -- Summary>>*

[4239] (1) A communication device comprising a microphone, a speaker, a display, an input device, a camara, and a multiple mode implementer, wherein said multiple mode implementer implements a voice communication mode and an OCR mode, a series of audio data are input to and output from said microphone and said speaker respectively thereyby enabling the user of said communication device to voice communicate with another person when said voice communication mode is implemented, an image is input to said camera, one or more of alphanumeric data are extracted from said image data, and an identified data is identified among said one or more of alphanumeric data when said OCR mode is implemented.

[4240] (2) The communication device of summary (1), wherein said identified data is a web address data representing a web address.

[4241] (3) The communication device of summary (1), wherein said identified data is an email address data representing an email address.

[4242] (4) The communication device of summary (1), wherein said identified data is a phone data representing a phone number.

[4243] (5) An OCR software program stored in a host computer which is downloadable to a communication device, wherein said communication device comprises a micro-phone, a speaker, a display, an input device, a camara, and a multiple mode implementer, said multiple mode implementer implements a voice communication mode and an OCR mode, a series of audio data are input to and output from said microphone and said speaker respectively thereyby enabling the user of said communication device to voice communicate with another person when said voice communication mode is implemented, an image is input to said camera, one or more of alphanumeric data are extracted from said image data, and an identified data is identified among said one or more of alphanumeric data when said OCR mode is implemented under the control of said OCR software program.

[4244] (6) The OCR software program of summary (5), wherein said identified data is a web address data representing a web address.

[4245] (7) The OCR software program of summary (5), wherein said identified data is an email address data representing an email address.

[4246] (8) The OCR software program of summary (5), wherein

said identified data is a phone data representing a phone number.

[4247] **

[4248] *<<Multiple Mode Implementing Function>>*

[4249] Figs. 395 through 400 illustrate the multiple mode implementing function of Communication Device 200 which enables to activate and implement a plurality of modes, functions, and/or systems described in this specification simultaneously. The modes, functions, and/or systems which can be activated and implemented simultaneously with other modes, functions, and/or systems are primarily the following: the voice communication mode (explained in Fig. 1), the voice recognition system (explained in Figs. 5 and 19, and Figs. 156 through 160), the positioning system (explained in Figs. 20a through 32e, and Figs. 161 through 182), the auto backup system (explained in Figs. 33 through 37), the audio/video data capturing system (explained in Figs. 39 through 44), the digital mirror function (1) (2) (explained in Figs. 44c through 44e, and Figs. 145 through 155), the caller ID system (explained in Figs. 45 through 47), the stock purchase function (explained in Figs. 48 through 52), the timer email function (explained

in Figs. 53a and 53b), the call blocking function (explained in Figs. 54 through 56), the online payment function (explained in Figs. 60 through 64), the navigation system (explained in Figs. 65 through 74), the remote controlling system (explained in Figs. 75 through 83), the cellular TV function (explained in Figs. 88 through 135), the 3D video game function (explained in Figs. 136 through 144, Figs. 270 through 283 for the shooting video game function, and Figs. 284 through 294 for the driving video game function), the mobile ignition key function (explained in Figs. 183 through 201), the voice print authentication system (explained in Figs. 202 through 211), the fingerprint authentication system (explained in Figs. 212 through 221), the auto time adjust function (explained in Figs. 222 through 224), video/ phone mode (explained in Figs. 225 through 242), call taxi function (explained in Figs. 243 through 269), address book updating function (explained in Figs. 295 through 312), batch address book updating function (explained in Figs. 313 through 329c), batch scheduler updating function (explained in Figs. 330 through 352), calculator function (explained in Figs. 353 through 356), spreadsheet function (explained in Figs. 357 through

360), word processing function (explained in Figs. 361 through 373), TV remote controller function (explained in Figs. 374 through 394), CD/PC inter-communicating function (explained in Figs. 413 through 427), PDWR sound selecting function (explained in Figs. 428 through 456), start up software function (explained in Figs. 457 through 466), stereo audio data output function (explained in Figs. 468 through 479), stereo visual data output function (explained in Figs. 480 through 491), multiple signal processing function (explained in Figs. 492 through 529), GPS pin-pointing function (explained in Figs. 530 through 553), CCD bar code reader function (explained in Figs. 568 through 579), online renting function (explained in Figs. 580 through 633), SOS calling function (explained in Figs. 634 through 645), PC remote controlling function (explained in Figs. 651 through 670), PC remote downloading function (explained in Figs. 671 through 701), audiovisual playback function (explained in Figs. 702 through 716), audio playback function (explained in Figs. 717 through 731), ticket purchasing function (explained in Figs. 732 through 753), remote data erasing function (explained in Figs. 754 through 774), business card function (explained in Figs. 775

through 784), game vibrator function (explained in Figs. 784 through 786), part-time job finding function (explained in Figs. 787 through 801), parking lot finding function (explained in Figs. 802 through 832), on demand TV function (explained in Figs. 834 through 855), inter-communicating TV function (explained in Figs. 856 through 882), display controlling function (explained in Figs. 883 through 894), multiple party communicating function (explained in Figs. 894a through 917), display brightness controlling function (explained in Figs. 918 through 923), multiple party pin-pointing function (explained in Figs. 924 through 950f), digital camera function (explained in Figs. 951 through 968), and phone number linking function (explained in Figs. 968a through 983). For the avoidance of doubt, other modes, functions, and systems not explained above can also be activated and implemented by the present function.

[4250] Fig. 395 illustrates the software programs stored in RAM 206 (Fig. 1) to implement the multiple mode implementing function (Fig. 1). As described in Fig. 395, RAM 206 includes Multiple Mode Implementer Storage Area 20690a. Multiple Mode Implementer Storage Area 20690a stores Multiple Mode Implementer 20690b, Mode List Dis-

playing Software 20690c, Mode Selecting Software 20690d, Mode Activating Software 20690e, and Mode Implemention Repeater 20690f, all of which are software programs. Multiple Mode Implementer 20690b administers the overall implementation of the present function. One of the major tasks of Multiple Mode Implementer 20690b is to administer and control the timing and sequence of Mode List Displaying Software 20690c, Mode Selecting Software 20690d, Mode Activating Software 20690e, and Mode Implemention Repeater 20690f. For example, Multiple Mode Implementer 20690b executes them in the following order: Mode List Displaying Software 20690c, Mode Selecting Software 20690d, Mode Activating Software 20690e, and Mode Implemention Repeater 20690f. Mode List Displaying Software 20690c displays on LCD 201 (Fig. 1) a list of a certain amount or all modes, functions, and/or systems explained in this specification of which the sequence is explained in Fig. 396. Mode Selecting Software 20690d selects a certain amount or all modes, functions, and/or systems explained in this specification of which the sequence is explained in Fig. 397. Mode Activating Software 20690e activates a certain amount or all modes, functions, and/or systems selected

by the Mode Selecting Software 20690d of which the sequence is explained in Fig. 398. Mode Implemention Repeater 20690f executes Multiple Mode Implementer 20690b which reactivates Mode List Displaying Software 20690c, Mode Selecting Software 20690d, Mode Activating Software 20690e of which the sequence is explained in Fig. 399.

[4251] Fig. 396 illustrates the sequence of Mode List Displaying Software 20690c (Fig. 395). Referring to Fig. 396, CPU 211 (Fig. 1), under the command of Mode List Displaying Software 20690c, displays a list of a certain amount or all modes, functions, and/or systems described in this specification on LCD 201 (Fig. 1).

[4252] Fig. 397 illustrates the sequence of Mode Selecting Software 20690d (Fig. 395). Referring to Fig. 397, the user of Communication Device 200 inputs an input signal by utilizing Input Device 210 (Fig. 1) or via voice recognition system identifying one of the modes, functions, and/or systems displayed on LCD 201 (Fig. 1) (S1), and CPU 211 (Fig. 1), under the command of Mode Selecting Software 20690d, interpretes the input signal and selects the corresponding mode, function, or system (S2).

[4253] Fig. 398 illustrates the sequence of Mode Activating Soft-

ware 20690e (Fig. 395). Referring to Fig. 398, CPU 211 (Fig. 1), under the command of Mode Activating Software 20690e, activates the mode, function, or, system selected in S2 of Fig. 397. CPU 211 thereafter implements the activated mode, function, or system as described in the relevant drawings in this specification.

[4254] Fig. 399 illustrates the sequence of Mode Implemention Repeater 20690f (Fig. 395). Referring to Fig. 399, the user of Communication Device 200 inputs an input signal by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). Once the activation of the selected mode, function, or system described in Fig. 398 hereinbefore is completed, and if the input signal indicates to repeat the process to activate another mode, function, or system (S2), CPU 211 (Fig. 1), under the command of Mode Implemention Repeater 20690f, executes Multiple Mode Implementer 20690b (Fig. 395), which reactivates Mode List Displaying Software 20690c (Fig. 395), Mode Selecting Software 20690d (Fig. 395), and Mode Activating Software 20690e (Fig. 395) to activate the second mode, function, or system while the first mode, function, or system is implemented by utilizing the method of so-called 'time sharing' (S3). Mode List Displaying Software 20690c, Mode

Selecting Software 20690d, and Mode Activating Software 20690e can be repeatedly executed until all modes, function, and systems displayed on LCD 201 (Fig. 1) are selected and activated. The activation of modes, functions, and/or systems is not repeated if the input signal explained in S2 so indicates.

[4255] As another embodyment, Multiple Mode Implementer 20690b, Mode List Displaying Software 20690c, Mode Selecting Software 20690d, Mode Activating Software 20690e, and Mode Implemention Repeater 20690f described in Fig. 395 may be integrated into one software program, Multiple Mode Implementer 20690b, as described in Fig. 400. Referring to Fig. 400, CPU 211 (Fig. 1), first of all, displays a list of a certain amount or all modes, functions, and/or systems described in this specification on LCD 201 (Fig. 1) (S1). Next, the user of Communication Device 200 inputs an input signal by utilizing Input Device 210 (Fig. 1) or via voice recognition system identifying one of the modes, functions, and/or systems displayed on LCD 201 (S2), and CPU 211 interpretes the input signal and selects the corresponding mode, function, or system (S3). CPU 211 activates the mode, function, or system selected in S3, and thereafter implements the activated

mode, function, or system as described in the relevant drawings in this specification (S4). Once the activation of the selected mode, function, or system described in S4 is completed, the user of Communication Device 200 inputs an input signal by utilizing Input Device 210 or via voice recognition system (S5). If the input signal indicates to re-peat the process to activate another mode, function, or system (S6), CPU 211 repeats the steps S1 through S4 to activate the second mode, function, or system while the first mode, function, or system is implemented by utiliz-ing the method so-called 'time sharing'. The steps of S1 though S4 can be repeatedly executed until all modes, function, and systems displayed on LCD 201 are selected and activated. The activation of modes, functions, and/or systems is not repeated if the input signal explained in S5 so indicates. The examples of Multiple Mode Implementer 20690b of the second embodiment are described in Figs. 137, 145, 156, 162, 171, 181a, 186, 202, 226, 243a, 296, 314, 332, 353, 357, and 361. As another embodi-ment, before or at the time one software program is acti-vated, CPU 211 may, either automatically or manually, terminate the other software programs already activated in order to save the limited space of RAM 206, thereby al-

lowing only one software program implemented at a time. For the avoidance of doubt, the meaning of each term 'mode(s)', 'function(s)', and 'system(s)' is equivalent to the others in this specification. Namely, the meaning of 'mode(s)' includes and is equivalent to that of 'function(s)' and 'system(s)', the meaning of 'function(s)' includes and is equivalent to that of 'mode(s)' and 'system(s)', and the meaning of 'system(s)' includes and is equivalent to that of 'mode(s)' and 'function(s)'. Therefore, even only mode(s) is expressly utilized in this specification, it impliedly includes function(s) and/or system(s) by its definition.

[4256] *<<Multiple Software Download Function>>*

[4257] Figs. 401 through 407 illustrate the multiple software download function which enables Communication Device 200 to download a plurality of software programs simultaneously. All software programs, data, any any types of information to implement all modes, functions, and systems described in this specification are stored in a host or server from which Communication Device 200 can download.

[4258] Fig. 401 illustrates the software programs stored in RAM 206 (Fig. 1). As described in Fig. 401, RAM 206 includes Multiple Software Download Controller Storage Area

20691a. Multiple Software Download Controller Storage Area 20691a includes Multiple Software Download Controller 20691b, Download Software List Displaying Software 20691c, Download Software Selector 20691d, Download Software Storage Area Selector 20691e, Download Implementer 20691f, and Download Repeater 20691g. Multiple Software Download Controller 20691b administers the overall implementation of the present function. One of the major tasks of Multiple Software Download Controller 20691b is to administer and control the timing and sequence of Download Software List Displaying Software 20691c, Download Software Selector 20691d, Download Software Storage Area Selector 20691e, Download Implementer 20691f, and Download Repeater 20691g. For example, Multiple Software Download Controller 20691b executes them in the following order: Download Software List Displaying Software 20691c, Download Software Selector 20691d, Download Software Storage Area Selector 20691e, Download Implementer 20691f, and Download Repeater 20691g. Download Software List Displaying Software 20691c displays on LCD 201 (Fig. 1) a list of a certain amount or all software programs necessary to implement the modes, functions, and/or systems explained

in this specification of which the sequence is explained in Fig. 402 hereinafter. Download Software Selector 20691d selects one of the software programs displayed on LCD 201 of which the sequence is explained in Fig. 403 hereinafter. Download Software Storage Area Selector 20691e selects the storage area in RAM 206 where the downloaded software program is stored of which the sequence is explained in Fig. 404 hereinafter. Download Implementer 20691f implements the download process of the software program selected by Download Software Selector 20691d hereinbefore and stores the software program in the storagre area selected by Download Software Storage Area Selector 20691e hereinbefore of which the sequence is explained in Fig. 405 hereinafter. Download Repeater 20691g executes Multiple Software Download Controller 20691b which reactivates Download Software List Displaying Software 20691c, Download Software Selector 20691d, Download Software Storage Area Selector 20691e, and Download Implementer 20691f of which the sequence is explained in Fig. 405 hereinafter.

[4259] Fig. 402 illustrates the sequence of Download Software List Displaying Software 20691c (Fig. 401). Referring to Fig. 402, CPU 211 (Fig. 1), under the command of Down-

load Software List Displaying Software 20691c, displays a list of a certain amount or all software programs to implement all modes, functions, and systems described in this specification on LCD 201 (Fig. 1).

[4260] Fig. 403 illustrates the sequence of Download Software Selector 20691d (Fig. 401). Referring to Fig. 403, the user of Communication Device 200 inputs an input signal by utilizing Input Device 210 (Fig. 1) or via voice recognition system identifying one of the software programs displayed on LCD 201 (Fig. 1) (S1), and CPU 211, under the command of Download Software Selector 20691d, interpretes the input signal and selects the corresponding software program (S2).

[4261] Fig. 404 illustrates the sequence of Download Software Storage Area Selector 20691e (Fig. 401). Referring to Fig. 404, CPU 211 (Fig. 1), under the command of Download Software Storage Area Selector 20691e, selects a specific storage area in RAM 206 (Fig. 1) where the downloaded software program is to be stored. The selection of the specific storage area in RAM 206 may be done automatically by CPU 211 or manually by the user of Communication Device 200 by utilizing Input Device 210 (Fig. 1) or via voice recognition system.

[4262] Fig. 405 illustrates the sequence of Download Implementer 20691f (Fig. 401). Referring to Fig. 405, CPU 211 (Fig. 1), under the command of Download Implementer 20691f, implements the download process of the software program selected by Download Software Selector 20691d (Fig. 403) and stores the software program in the storagre area selected by Download Software Storage Area Selector 20691e (Fig. 404).

[4263] Fig. 406 illustrates the sequence of Download Repeater 20691g (Fig. 401). Referring to Fig. 406, the user of Communication Device 200 inputs an input signal by utilizing Input Device 210 (Fig. 1) or via voice recognition system when the downloading process of the software program is completed (S1). If the input signal indicates to repeat the process to download another software program, CPU 211 (Fig. 1), under the command of Download Repeater 20691g, executes Multiple Software Download Controller 20691b (Fig. 401), which reactivates Download Software List Displaying Software 20691c (Fig. 401), Download Software Selector 20691d (Fig. 401), Download Software Storage Area Selector 20691e (Fig. 401), and Download Implementer 20691f (Fig. 401) to download the second software program while the downloading process of the

first software program is still in progress by utilizing the method so-called 'time sharing' (S3). Download Software List Displaying Software 20691c, Download Software Selector 20691d, Download Software Storage Area Selector 20691e, and Download Implementer 20691f can be repeatedly executed until all software programs displayed on LCD 201 (Fig. 1) are selected and downloaded. The downloading process is not repeated if the input signal explained in S2 so indicates.

[4264] As another embodyment, as described in Fig. 407, Multiple Software Download Controller 20691b, Download Software List Displaying Software 20691c, Download Software Selector 20691d, Download Software Storage Area Selector 20691e, Download Implementer 20691f, and Download Repeater 20691g may be integrated into a single software program, Multiple Software Download Controller 20691b. First of all, CPU 211 (Fig. 1) displays a list of all software programs downloadable from a host or server on LCD 201 (Fig. 1) (S1). The user of Communication Device 200 inputs an input signal by utilizing Input Device 210 (Fig. 1) or via voice recognition system identifying one of the software programs displayed on LCD 201 (S2), and CPU 211 interpretes the input signal and selects

the corresponding software program (S3) and selects the storage area in RAM 206 (Fig. 1) where the downloaded software program is to be stored (S4). The selection of the specific storage area in RAM 206 may be done automatically by CPU 211 or manually by the user of Communication Device 200 by utilizing Input Device 210 (Fig. 1) or via voice recognition system. CPU 211 then implements the download process of the software program selected in S3 and stores the software program in the storagre area selected in S4 (S5). The user of Communication Device 200 inputs an input signal by utilizing Input Device 210 or via voice recognition system when the activation of downloading process of the software program desecribed in S5 is completed (S6). If the input signal indicates to repeat the process to download another software program, CPU 211 repeats the steps of S1 through S5 to download the second software program while the downloading process of the first software program is still in progress by utilizing the method so-called 'time sharing' (S7). The steps of S1 through S5 can be repeated until all software programs displayed on LCD 201 are selected and downloaded. The downloading process is not repeated if the input signal explained in S6 so indicates.

[4265] For the avoidance of doubt, Figs. 401 through 407 are also applicable to download data and any types of information other than software programs.

[4266] *<<Selected Software Distributing Function>>*

[4267] Figs. 1376 through 1393d illustrate another illustration of the multiple software download function described in Fig. 401 through 407 which enables Communication Device 200 to download a plurality of software programs simultaneously. The present function is implemented not only for downloading software programs to implement any mode, function, and system described in this specification; the present function is also implemented for downloading data and any type of information to implement any mode, function, and system described in this specification which are stored in Host H (Fig. 429) from which Communication Device 200 can download. For the avoidance of doubt, a reference to Figs. 401 through 407 (e.g., referring to Figs. 401 through 407 in parenthesis) automatically refers to Figs. 1376 through 1393d in this specification; a reference to Figs. 1376 through 1393d (e.g., referring to Figs. 1376 through 1393d in parenthesis) automatically refers to Figs. 401 through 407 in this specification.

[4268] Fig. 1376 illustrates the storage areas included in Host H (Fig. 429). As described in the present drawing, Host H includes Selected Software Distributing Information Storage Area H56a of which the data and the software programs stored therein are described in Fig.1377.

[4269] Fig. 1377 illustrates the storage areas included in Selected Software Distributing Information Storage Area H56a (Fig. 1376). As described in the present drawing, Selected Software Distributing Information Storage Area H56a includes Selected Software Distributing Data Storage Area H56b and Selected Software Distributing Software Storage Area H56c. Selected Software Distributing Data Storage Area H56b stores the data necessary to implement the present function on the side of Host H, such as the ones described in Figs. 1378 through 1380. Selected Software Distributing Software Storage Area H56c stores the software programs necessary to implement the present function on the side of Host H, such as the ones described in Fig. 1381.

[4270] Fig. 1378 illustrates the storage areas included in Selected Software Distributing Data Storage Area H56b (Fig. 1377). As described in the present drawing, Selected Software Distributing Data Storage Area H56b includes Software Title Storage Area H56b1, Software Data Storage Area

H56b2, and Work Area H56b3. Software Title Storage Area H56b1 stores the data described in Fig. 1379. Software Data Storage Area H56b2 stores the data described in Fig. 1380. Work Area H56b3 is utilized as a work area to perform calculation and store data temporarily.

[4271] Fig. 1379 illustrates the data stored in Software Title Storage Area H56b1 (Fig. 1378). As described in the present drawing, Software Title Storage Area H56b1 comprises two columns, i.e., 'Software ID' and 'Software Title'. Column 'Software ID' stores the software IDs, and each software ID represents an identification of the corresponding software title stored in column 'Software Title'. Column 'Software Title' stores the title in text format of the software data of the corresponding software ID stored in column 'Software Data' described in Fig. 1380. In the example described in the present drawing, Software Title Storage Area H56b1 stores the following data: the software ID 'Software #1' and the corresponding software title 'Software Title #1'; the software ID 'Software #2' and the corresponding software title 'Software Title #2'; the software ID 'Software #3' and the corresponding software title 'Software Title #3'; the software ID 'Software #4' and the corresponding software title 'Software Title #4'; and the soft-

ware ID 'Software #5' and the corresponding software title 'Software Title #5'.

[4272] Fig. 1380 illustrates the data stored in Software Data Storage Area H56b2 (Fig. 1378). As described in the present drawing, Software Data Storage Area H56b2 comprises two columns, i.e., 'Software ID' and 'Software Data'. Column 'Software ID' stores the software IDs, and each software ID represents an identification of the corresponding software title stored in column 'Software Data'. Column 'Software Data' stores the software data, and each software data is the software program (including data and any other information) to implement the function described in this specification. In the example described in the present drawing, Software Data Storage Area H56b2 stores the following data: the software ID 'Software #1' and the corresponding software data 'Software Data #1'; the software ID 'Software #2' and the corresponding software data 'Software Data #2'; the software ID 'Software #3' and the corresponding software data 'Software Data #3'; the software ID 'Software #4' and the corresponding software data 'Software Data #4'; and the software ID 'Software #5' and the corresponding software data 'Software Data #5'. Only five software data are described in the present drawing for

purposes of explaining the present function; the number of the software data stored in Software Data Storage Area H56b2 (and the corresponding software title stored in Software Title Storage Area H56b1 (Fig. 1379) may be as many as the number of OLE_LINK1the modes, functions, and systems OLE_LINK1described in this specification).

[4273] Fig. 1381 illustrates the software programs stored in Selected Software Distributing Software Storage Area H56c. As described in the present drawing, Selected Software Distributing Software Storage Area H56c stores Download Software List Displaying Software H56c2 and Download Implementer H56c5. Download Software List Displaying Software H56c2 is the software program described in Fig. 1388. Download Implementer H56c5 is the software program described in Fig. 1391.

[4274] Fig. 1382 illustrates the storage areas included in RAM 206 (Fig. 1). As described in the present drawing, RAM 206 includes Selected Software Distributing Information Storage Area 20656a of which the data and the software programs stored therein are described in Fig.1383.

[4275] Fig. 1383 illustrates the storage areas included in Selected Software Distributing Information Storage Area 20656a (Fig. 1382). As described in the present drawing, Selected

Software Distributing Information Storage Area 20656a includes Selected Software Distributing Data Storage Area 20656b and Selected Software Distributing Software Storage Area 20656c. Selected Software Distributing Data Storage Area 20656b stores the data necessary to implement the present function on the side of Communication Device 200, such as the ones described in Figs. 1384 through 1386. Selected Software Distributing Software Storage Area 20656c stores the software programs necessary to implement the present function on the side of Communication Device 200, such as the ones described in Fig. 1387.

[4276] Fig. 1384 illustrates the storage areas included in Selected Software Distributing Data Storage Area 20656b (Fig 1383). As described in the present drawing, Selected Software Distributing Data Storage Area 20656b includes Software Title Storage Area 20656b1, Software Data Storage Area 20656b2, and Work Area 20656b3. Software Title Storage Area 20656b1 stores the data described in Fig. 1385. Software Data Storage Area 20656b2 stores the data described in Fig. 1386. Work Area 20656b3 is utilized as a work area to perform calculation and store data temporarily.

[4277] Fig. 1385 illustrates the data stored in Software Title Storage Area 20656b1 (Fig. 1384). As described in the present drawing, Software Title Storage Area 20656b1 comprises two columns, i.e., 'Software ID' and 'Software Title'. Column 'Software ID' stores the software IDs, and each software ID represents an identification of the corresponding software title stored in column 'Software Title'. Column 'Software Title' stores the title in text format of the software data of the corresponding software ID stored in column 'Software Data' described in Fig. 1386. In the example described in the present drawing, Software Title Storage Area 20656b1 stores the following data: the software ID 'Software #1' and the corresponding software title 'Software Title #1'; the software ID 'Software #2' and the corresponding software title 'Software Title #2'; the software ID 'Software #3' and the corresponding software title 'Software Title #3'; the software ID 'Software #4' and the corresponding software title 'Software Title #4'; and the software ID 'Software #5' and the corresponding software title 'Software Title #5'.

[4278] Fig. 1386 illustrates the data stored in Software Data Storage Area 20656b2 (Fig. 1384). As described in the present drawing, Software Data Storage Area 20656b2 comprises

two columns, i.e., 'Software ID' and 'Software Data'. Column 'Software ID' stores the software IDs, and each software ID represents an identification of the corresponding software title stored in column 'Software Data'. Column 'Software Data' stores the software data, and each software data is the software program (including data and any other information) to implement the function described in this specification. In the example described in the present drawing, Software Data Storage Area 20656b2 stores the following data: the software ID 'Software #1' and the corresponding software data 'Software Data #1'; the software ID 'Software #2' and the corresponding software data 'Software Data #2'; the software ID 'Software #3' and the corresponding software data 'Software Data #3'; the software ID 'Software #4' with no corresponding software data; and the software ID 'Software #5' with no corresponding software data. Only few software data are described in the present drawing for purposes of explaining the present function; the number of the software data stored in Software Data Storage Area 20656b2 (and the corresponding software title stored in Software Title Storage Area 20656b1 (Fig. 1385) may be as many as the number of the modes, functions, and systems described

in this specification).

[4279] Fig. 1387 illustrates the software programs stored in Selected Software Distributing Software Storage Area 20656c. As described in the present drawing, Selected Software Distributing Software Storage Area 20656c stores Multiple Software Download Controller 20656c1, Download Software List Displaying Software 20656c2, Download Software Selector 20656c3, Download Software Storage Area Selector 20656c4, Download Implementer 20656c5, and Download Repeater 20656c6. Multiple Software Download Controller 20656c1 is the software program described hereafter. Download Software List Displaying Software 20656c2 is the software program described in Fig. 1388. Download Software Selector 20656c3 is the software program described in Fig. 1389. Download Software Storage Area Selector 20656c4 is the software program described in Fig. 1390. Download Implementer 20656c5 is the software program described in Fig. 1391. Download Repeater 20656c6 is the software program described in Fig. 1392. Referring to Multiple Software Download Controller 20656c1, this software program administers the overall implementation of the present function. One of the major tasks of Multiple Software Download

Controller 20656c1 is to administer and control the timing and sequence of Download Software List Displaying Software 20656c2, Download Software Selector 20656c3, Download Software Storage Area Selector 20656c4, Download Implementer 20656c5, and Download Repeater 20656c6. For example, Multiple Software Download Controller 20656c1 executes them in the following order: Download Software List Displaying Software 20656c2, Download Software Selector 20656c3, Download Software Storage Area Selector 20656c4, Download Implementer 20656c5, and Download Repeater 20656c6.

[4280] Fig. 1388 illustrates Download Software List Displaying Software H56c2 stored in Selected Software Distributing Software Storage Area H56c (Fig. 1381) of Host H (Fig. 429) and Download Software List Displaying Software 20656c2 stored in Selected Software Distributing Software Storage Area 20656c (Fig. 1387) of Communication Device 200, which displays on LCD 201 (Fig. 1) the titles of the software programs downloadable from Host H, which are necessary to implement the modes, functions, and/or systems explained in this specification. As described in the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a software list request to Host H (S1).

Upon receiving the software list request from Communication Device 200 (S2), Host H retrieves the software IDs and the software titles from Software Title Storage Area 20656b1 (Fig. 1385) (S3), which are sent to Communication Device 200 (S4). Upon receiving the software IDs and the software titles from Host H (S5), CPU 211 stores the data in Software Title Storage Area 20656b1 (Fig. 1385) (S6). CPU 211 retrieves the software IDs and the software titles from Software Title Storage Area 20656b1 (Fig. 1385) (S7), and displays the data on LCD 201 (S8). In the present example, the following data are retrieved from Software Title Storage Area H56b1 (Fig. 1379) of Host H and stored in Software Title Storage Area 20656b1 (Fig. 1385) of Communication Device 200: the software ID 'Software #1' and the corresponding software title 'Software Title #1'; the software ID 'Software #2' and the corresponding software title 'Software Title #2'; the software ID 'Software #3' and the corresponding software title 'Software Title #3'; the software ID 'Software #4' and the corresponding software title 'Software Title #4'; and the software ID 'Software #5' and the corresponding software title 'Software Title #5'.

[4281] Fig. 1389 illustrates Download Software Selector 20656c3

stored in Selected Software Distributing Software Storage Area 20656c (Fig. 1387) of Communication Device 200, which selects the software program to be downloaded from Host H (Fig. 429). Referring to the present drawing, the user of Communication Device 200 inputs an input signal by utilizing Input Device 210 (Fig. 1) or via voice recognition system identifying one of the software programs displayed on LCD 201 (Fig. 1) (S1), and CPU 211, under the command of Download Software Selector 20656c3, interpretes the input signal and selects the corresponding software program (S2). CPU 211 stores the software ID of the selected software program in Work Area 20656b3 (Fig. 1384) (S3).

[4282] Fig. 1390 illustrates Download Software Storage Area Selector 20656c4 stored in Selected Software Distributing Software Storage Area 20656c (Fig. 1387) of Communication Device 200, which selects the storage area in RAM 206 where the downloaded software program is stored. Referring to the present drawing, CPU 211 (Fig. 1), under the command of Download Software Storage Area Selector 20656c4, selects a specific storage area in RAM 206 (Fig. 1) where the downloaded software program is to be stored. The selection of the specific storage area in RAM

206 may be implemented automatically by CPU 211 or manually by the user of Communication Device 200 by utilizing Input Device 210 (Fig. 1) or via voice recognition system.

[4283] Fig. 1391 illustrates Download Implementer 20656c5 stored in Selected Software Distributing Software Storage Area H56c (Fig. 1381) of Host H (Fig. 429) and Download Implementer 20656c5 stored in Selected Software Distributing Software Storage Area 20656c (Fig. 1387) of Communication Device 200, which implements the download process of the software program selected by Download Software Selector 20656c3 hereinbefore and stores the software program in the storagre area selected by Download Software Storage Area Selector 20656c4 hereinbefore. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 retrieves the software ID of the selected software program from Work Area 20656b3 (Fig. 1384) (S1), and sends the software ID to Host H (S2). Upon receiving the software ID from Communication Device 200 (S3), Host H retrieves the corresponding software data from Software Data Storage Area 20656b2 (Fig. 1386) (S4), and sends the data to Communication Device 200 (S5). Upon receiving the software data

from Host H (S6), Communication Device 200 stores the data in the storage area selected by Download Software Storage Area Selector 20656c4 (Fig. 1390) (S7).

[4284] Fig. 1392 illustrates Download Repeater 20656c6 stored in Selected Software Distributing Software Storage Area 20656c (Fig. 1387) of Communication Device 200, which executes Multiple Software Download Controller 20656c1 which reactivates Download Software List Displaying Software 20656c2, Download Software Selector 20656c3, Download Software Storage Area Selector 20656c4, and Download Implementer 20656c5 in order to download another software program. Referring to the present drawing, the user of Communication Device 200 inputs an input signal by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S1). The input signal can be input whether or not the downloading process of the software program is completed. Assuming that the process of the software program is not yet completed. If the input signal indicates to repeat the process to download another software program, CPU 211 (Fig. 1), under the command of Download Repeater 20656c6, executes Multiple Software Download Controller 20656c1, which reactivates Download Software List Displaying Software 20656c2, Down-

load Software Selector 20656c3, Download Software Storage Area Selector 20656c4, and Download Implementer 20656c5 to download the second software program while the downloading process of the first software program is still in progress by utilizing the method so-called 'time sharing' (S3). Download Software List Displaying Software 20656c2, Download Software Selector 20656c3, Download Software Storage Area Selector 20656c4, and Download Implementer 20656c5 can be repeatedly executed until all software programs displayed on LCD 201 (Fig. 1) are selected and downloaded. The downloading process is not repeated if the input signal explained in S2 so indicates.

[4285] Figs. 1393a through 1393d illustrate another embodiment of the sequence described in Fig. 1392. Multiple Software Download Controller 20656c1, Download Software List Displaying Software 20656c2, Download Software Selector 20656c3, Download Software Storage Area Selector 20656c4, Download Implementer 20656c5, and Download Repeater 20656c6 and integrated into one software program, i.e., Multiple Software Download Controller 20656c1. Referring to the present drawing, CPU 211 (Fig. 1) of Communication Device 200 sends a software list re-

quest to Host H (S1). Upon receiving the software list request from Communication Device 200 (S2), Host H retrieves the software IDs and the software titles from Software Title Storage Area 20656b1 (Fig. 1385) (S3), which are sent to Communication Device 200 (S4). Upon receiving the software IDs and the software titles from Host H (S5), CPU 211 stores the data in Software Title Storage Area 20656b1 (Fig. 1385) (S6). CPU 211 retrieves the software IDs and the software titles from Software Title Storage Area 20656b1 (Fig. 1385) (S7), and displays the data on LCD 201 (S8). In the present example, the following data are retrieved from Software Title Storage Area H56b1 (Fig. 1379) of Host H and stored in Software Title Storage Area 20656b1 (Fig. 1385) of Communication Device 200: the software ID 'Software #1' and the corresponding software title 'Software Title #1'; the software ID 'Software #2' and the corresponding software title 'Software Title #2'; the software ID 'Software #3' and the corresponding software title 'Software Title #3'; the software ID 'Software #4' and the corresponding software title 'Software Title #4'; and the software ID 'Software #5' and the corresponding software title 'Software Title #5'. Next, the user of Communication Device 200 inputs an input signal

by utilizing Input Device 210 (Fig. 1) or via voice recognition system identifying one of the software programs displayed on LCD 201 (Fig. 1) (S9), and CPU 211 interpretes the input signal and selects the corresponding software program (S10). CPU 211 stores the software ID of the selected software program in Work Area 20656b3 (Fig. 1384) (S11). CPU 211 (Fig. 1) then selects a specific storage area in RAM 206 (Fig. 1) where the downloaded software program is to be stored (S12). The selection of the specific storage area in RAM 206 may be implemented automatically by CPU 211 or manually by the user of Communication Device 200 by utilizing Input Device 210 (Fig. 1) or via voice recognition system. CPU 211 (Fig. 1) of Communication Device 200 retrieves the software ID of the selected software from Work Area 20656b3 (Fig. 1384) (S13), and sends the software ID to Host H (S14). Upon receiving the software ID from Communication Device 200 (S15), Host H retrieves the corresponding software data from Software Data Storage Area 20656b2 (Fig. 1386) (S16), and sends the data to Communication Device 200 (S17). Upon receiving the software data from Host H (S18), Communication Device 200 stores the data in the storage area selected by Download Software Storage Area

Selector 20656c4 (Fig. 1390) (S19). Next, the user of Communication Device 200 inputs an input signal by utilizing Input Device 210 (Fig. 1) or via voice recognition system (S20). The input signal can be input whether or not the downloading process of the software program is completed. Assuming that the process of the software program is not yet completed. If the input signal indicates to repeat the process to download another software program (S21), CPU 211 (Fig. 1), repeats the sequence from S8 to download the second software program while the downloading process of the first software program is still in progress by utilizing the method so-called 'time sharing' (S22). The sequence can be repeatedly executed until all software programs displayed on LCD 201 (Fig. 1) are selected and downloaded. The downloading process is not repeated if the input signal explained in S21 so indicates.

[4286] *<<Multiple Software Download And Mode Implementation Function>>*

[4287] Figs. 408 through 412 illustrate the multiple software download and mode implementation function which enables Communication Device 200 to implement the multiple mode implementing function and the multiple software download function simultaneously. Namely, Commu-

nication Device 200 is capable of downloading a plurality of software programs and activating/implementing a plurality of modes, functions, and/or systems simultaneously.

[4288] Fig. 408 illustrates the software program stored in RAM 206 (Fig. 1). As described in Fig. 408, RAM 206 (Fig. 1) includes Multiple Software Download And Mode Activation Implementer Storage Area 20692a. Multiple Software Download And Mode Activation Implementer Storage Area 20692a stores Multiple Mode Implementer 20690b, Multiple Software Download And Mode Activation Implementer Storage Area Selector 20692c, Multiple Mode Implementer Activator 20692d, and Multiple Software Download Controller Activator 20692e, all of which are software programs. Multiple Software Download And Mode Activation Implementer 20692b administers the overall implementation of the present function. One of the major tasks of Multiple Software Download And Mode Activation Implementer 20692b is to administer and control the timing and sequence of Multiple Software Download And Mode Activation Implementer Storage Area Selector 20692c, Multiple Mode Implementer Activator 20692d, and Multiple Software Download Controller Activator 20692e. For

example, Multiple Software Download And Mode Activation Implementer 20692b executes them in the following order: Multiple Software Download And Mode Activation Implementer Storage Area Selector 20692c, Multiple Mode Implementer Activator 20692d, and Multiple Software Download Controller Activator 20692e. Multiple Software Download And Mode Activation Implementer Storage Area Selector 20692c selects storage areas for implementing the multiple mode implementing function and the multiple software download function. Multiple Mode Implementer Activator 20692d activates Multiple Mode Implementer 20690b (Fig. 395) to implement the multiple mode implementing function. Multiple Software Download Controller Activator 20692e activates Multiple Software Download Controller 20691b (Fig. 401) to implement the multiple software download function. Both Multiple Mode Implementer Activator 20692d and Multiple Software Download Controller Activator 20692e can be executed simultaneously by the control of Multiple Software Download And Mode Activation Implementer 20692b.

[4289] Fig. 409 illustrates the sequence of Multiple Software Download And Mode Activation Implementer Storage Area Selector 20692c (Fig. 408). Referring to Fig. 409, CPU 211

(Fig. 1), under the command of Multiple Software Download And Mode Activation Implementer Storage Area Selector 20692c, selects a plurality of storage areas in RAM 206 (Fig. 1) to download a plurality of software programs and to activate a plurality of modes, functions, and/or systems simultaneously. Namely, CPU 211 selects one set of a plurality of storage areas in RAM 206 to implement the multiple mode implementing function of which the details are described in Figs. 395 through 400, and also selects another set of a plurality of storage areas in RAM 206 to implement the multiple software download function of which the details are described in Figs. 401 through 407. The selection of the plurality of storage areas in RAM 206 may be done automatically by CPU 211 or manually by the user of Communication Device 200 by utilizing Input Device 210 (Fig. 1) or via voice recognition system.

[4290] Fig. 410 illustrates the sequence of Multiple Mode Implementer Activator 20692d (Fig. 408). Referring to Fig. 410, CPU 211 (Fig. 1), under the command of Multiple Mode Implementer Activator 20692d, activates Multiple Mode Implementer 20690b (Fig. 395) to implement the multiple mode implementing function of which the details are de-

scribed in Figs. 395 through 400.

[4291] Fig. 411 illustrates the sequence of Multiple Software Download Controller Activator 20692e (Fig. 408). Referring to Fig. 411, CPU 211 (Fig. 1), under the command of Multiple Software Download Controller Activator 20692e, activates Multiple Software Download Controller 20691b (Fig. 401) to implement the multiple software download function of which the details are described in Figs. 401 through 407.

[4292] As another embodyment as described in Fig. 412, Multiple Software Download And Mode Activation Implementer 20692b, Multiple Software Download And Mode Activation Implementer Storage Area Selector 20692c, Multiple Mode Implementer Activator 20692d, and Multiple Software Download Controller Activator 20692e, described in Fig. 408, may be integrated into one single software program, Multiple Software Download And Mode Activation Implementer 20692b. Referring to Fig. 412, CPU 211 (Fig. 1), first of all, selects a plurality of storage areas in RAM 206 (Fig. 1) to download a plurality of software programs and to activate a plurality of modes, functions, and/or systems simultaneously (S1). Namely, CPU 211 selects one set of a plurality of storage areas in RAM 206 to implement the

multiple mode implementing function and also selects another set of a plurality of storage areas in RAM 206 to implement the multiple software download function. The selection of the plurality of storage areas in RAM 206 may be done automatically by CPU 211 or manually by the user of Communication Device 200 by utilizing Input Device 210 (Fig. 1) or via voice recognition system. CPU 211 next activates Multiple Mode Implementer 20690b (Fig. 395) to implement the multiple mode implementing function of which the details are described in Figs. 395 through 400 (S2a). At the same time, CPU 211 (Fig. 1) activates Multiple Software Download Controller 20691b (Fig. 401) to implement the multiple software download function of which the details are described in Figs. 401 through 407.

[4293] For the avoidance of doubt, Figs. 408 through 412 is also applicable to downloading data and any types of information other than downloading software programs.

[4294] **
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[4295] Having thus described a presently preferred embodiment of the present invention, it will not be appreciated that the aspects of the invention have been fully achieved, and it will be understood by those skilled in the art that many

changes in construction and circuitry and widely differing embodiments and applications of the invention will suggest themselves without departing from the spirit and scope of the present invention. The disclosures and the description herein are intended to be illustrative and are not in any sense limiting of the invention, more preferably defined in scope by the following claims. For the avoidance of doubt, the applicant has no intent to surrender any equivalent of any element included in the claims by any amendment of the claims unless expressly and unambiguously stated otherwise in the amendment. Further, for the avoidance of doubt, the number of the prior arts introduced herein (and/or in IDS) may be of a large one, however, the applicant has no intent to hide the more relevent prior art(s) in the less relevant prior arts.